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COUNTRY PROGRAMME FOR

BRAZIL

UNDP assistance requested by the Government of Brazil for the period 1977-1981

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INTRODUCTION

This document presents, in an integrated and consolidated form, the Brazilian Government's priority demand for technical cooperation (within the limitations of available funds) from the United Nations Development Programme for the period 1977/81. Aside from reflecting this demand, the present Programme encompasses the guidelines, recommendations and general suggestions of the Government in connexion with UNDP technical cooperation and, in this sense, it must be viewed as a land-mark of such cooperation in the period.

The Second Country Programme represents a consolidation of the practice of planning and programming United Nations technical cooperation on a medium-term basis, initiated in 1972 with the First Country Programme. This practice has proved an efficient instrument for channeling UNDP technical cooperation towards the country's priority areas, permitting a rational and efficient utilization of available resources and ensuring that a sound list of priorities is established, an activity which becomes extremely difficult under the system of individual analysis of each project. The Country Programme permits, moreover, a comprehensive view of UNDP technical cooperation which greatly facilitates its critical analysis.

Although the Country Programme is a political document, its operative nature must be taken into account since it is basically a programming instrument and, as such, a dynamic document subject to changes and revisions during the programming period.

The basic objective behind its formulation was that of channeling UNDP technical cooperation to the priority targets, sectors and programmes defined in the Second National Development Plan and other Government plans derived thereof, particularly the Second Basic Plan for Scientific and Technological Development. The Second National Development Plan acts, therefore, as the main coherent equilibrating and integrating element of the Country Programme. For this reason, a summary of the Second National Development Plan is included in Chapter I.

Two important points deserve thus mention. First, a constant concern was shown throughout the formulations of the document to preserve its programme nature, that is, to ensure that it represented a comprehensive whole, rather than a number of projects. In this sense, the Second Country Programme greatly excels the 1972/76 Country Programme.

A second important point is the Government's decision to allocate, in addition to the usual counterpart funds, its own resources of up to US$ 12 million in local currency, that is 40% of the Brazilian IPF, as an overall financial support to the Programme, as proposed in Chapter IV. This fact in addition to the high National Counterpart/IPF ratio, of about 8.50 in the present Programme, attest to the significant national efforts being made as counterpart to external assistance.

The Programme includes a total of 62 projects with an external budget estimated at US$ 37.8 million (UNDP contribution and overall Government support) and a national counterpart contribution estimated at more than

Cr.$ 2.3 billion (about US$ 254 million at the exchange rate prevailing on 19/1/76). Special emphasis was given to scientific and technological projects, with the Science and Technology sector accounting for 78.3% of the programmed total.

An unprogrammed reserve of up to US$ 4.2 million, or 10% of the total, was maintained.

In addition to these 62 projects, a supplementary list of likewise priority projects (Chapter VIII) is includes which, given the available funds, the Government intends to incorporate in the current programme.

Annex II provides the basic data on Brazil as requested in the recommendations issued by the Governing Council. Annex III lists those abbreviations used in the document.

Brasilia, January 1976

CHAPTER I

THE SECOND NATIONAL DEVELOPMENT PLAN

The Second National Development Plan (PND), approved by Law nº 6151 of 4 December 1974, is the basic document outlining all Governmental actions for the 1975/79 period, setting forth the main targets, the strategy and general instruments available to the Government for the promotion of the country's development. The difficult and ardous planning task being undertaken is the compatibilization of the rapid growth acheived in recent years with the present international crisis, concentrating efforts on preserving the country's development capacity whilst at the same time exploring new possibilities. It is thus planned to mobilize the nation to a continuation of an accelerated but balanced expansion, so as to meet the international crisis without prejudicing the emergence of Brazil as an industrial society.

1. National Objectives and Options

The Second National Development Plan highlights the objective of pursuing national efforts towards the establishment, in Brazil, of a developed, modern, progressive and humane society focused on the Brazilian citizen, his different dimensions and aspirations. This is the paramount target of all national planning. This effort will be conducted along the lines of the Brazilian model of a socially, racially and politically open society, without predominance nor discrimination of interests or groups, classes or regions and safeguarding human values and the national identity of Brazilian culture.

This orientation implies:

a) Maintaining the accelerated growth rate of the past few years with the growth rate of employment opportunities exceeding the growth of the labour force;

b) Reaffirming the policy of gradual inflation control;

c) Maintaining the balance of payments in relative equilibrium;

d) Executing a policy for the improvement of personal and regional income distribution, simultaneously with economic growth;

e) Preserving social and political stability while ensuring the conscious participation of the productive classes and workers;

f) Achieving development without affecting the quality of life and without devastating the country's natural resources.

2. Overall Economic Strategy, Economic Model and Basic Options

The key factors behind the outstanding growth achieved by the Brazilian economy's highly dynamic development process, notably in the last five years, have been the conquest of new external markets as a result of rising exports, and the expansion in certain areas of the domestic market, particularly in urban zones. The recent growth has been characterized by a highly accelerated industrial expansion (12% per year between 1968 and 1974) along with the rapid increase of imports and exports, the latter growing 64% a year in the period.

However, exports still do not account for a large share of the GDP: only averaging 8.4% between 1972 and 1974. Nevertheless, because of their vigorous growth and their direct and indirect effects, they played a highly significant role in determining the growth rate.

Although the importance of the exports should grow with a view to achieving an equilibrium on the balance of payments, the expansion of new and more extensive segments of the domestic market through the gradual development of a mass consumption market will possibly have a greater impact on the growth of GDP until 1979.

It is unquestionable that to sustain such high growth rates in the future, with the same production and demand structures as in the previous stage, would be both difficult and irrational since the industrial sector is now already operating at full capacity and a new adverse international situation presents itself.

The readaptation of the supply and demand structure, which should be undertaken in the shortest time consistent with the preservation of growth, must take into account certain basic considerations.

On the one hand, in order to support the role of industry, it will be necessary to expand the contribution to the GDP of the Farming, Stock Raising, Agro-industry and Mining sectors as well as to develop the quarternary sector, i.e. services channeled towards the tertiary sector.

In Industry, special emphasis must be given to basic sectors, notably the Equipment Industry and Basic Inputs.

As regards Infrastructure, particularly energy, the main concern will be to ensure that the different sectors keep pace with the general economic growth. The effort to control the consumption of liquid fuels will obviously dominate the entire infrastructure programme.

The development strategy to be pursued envisages the following activities:

i. Consolidation of a modern economy, encompassing the entire Center-South and progressively incorporating the remaining regions, through an investment programme in the order of Cr$ 715 billions (at 1975 prices), covering the areas of Basic Industries, Scientific and Technological Development and Energy, Transport and Communication Infrastructure.

ii. Adjustment to the new realities of the world economy, particularly with regard to energy savings through the expansion of domestic sources; a guaranteed supply of basic industrial inputs preferably through national production; the expansion of the production of food and raw materials, strengthening Brazil's position as world supplier of these products; the development of new comparative advantages on the basis of an intensive utilization of the types of energy abundant in the country.

iii. A new stage in the efforts towards national integration, so as to take economic advantage of available space and human resources with a view to sustaining accelerated growth and to capturing new foreign markets.

iv. Social Development Strategy, designed to ensure a substantial increase in the real income of all classes, particularly the middle and working classes, and to eliminate in the shortest possible time the pockets of poverty still existing mainly in the semi-arid region of the Northeast and in the outskirts of the large urban centers.

v. Integration in the world economy, so that new options for progress become available to Brazil, and advantage is taken of the closer relations between the different blocs without, however, jeopardizing the country's national economic goals.

This overall strategy seeks to consolidate, by the end of the present decade, the economic and social model responsible for development over the last few years, characterized by the following basic options:

- Adoption of a market economy as a means of promoting development through decentralized decision-making and at the same time, using the public sector, which will have a direct say in the energy, transport and communication and economic infrastructure sectors, as a guiding instrument.

- In order to accelerate the development of certain sectors, to take advantage of powerful business enterprises by creating large concerns through mergers and incorporations, or through the establishment of financial or industrial-financial conglomerates, harmonizing this approach with an income distribution policy.

- Simultaneously to domestic efforts, the absorption of foreign savings, technology and managerial skills. In this area, multinational firms must adjust to the national strategy so that they do not harm but rather foster the development of national enterprise, including those of medium and small size. The excessive concentration in a single country or area, practices of market control and take-over by competitors, should likewise be avoided.

- Use of industrial technology so as to strengthen competitiveness in a large number of industrial and infrastructure sectors, without creating employment problems and pollution effects and harming the environment in general.

- The market economy should not be limited to the geographically occupied areas, but rather be extended to the entire territory, decentralising economic activities including those of an industrial nature.

- The decision not to delay improvements in the national income distribution or an increase in opportunities for all classes until the country becomes more prosperous. This should be an integral part of the decision to maintain an accelerated growth rate.

3. Industrial Strategy

Industrial expansion in the period 1975/79 calls for the adoption of an industrial policy oriented towards the final shaping of the desired industrial configuration for the country. The following main aspects will be pursued:

i - development of basic sectors - particularly the capital goods and the basic electronic industries and the area of basic inputs. Within the capital goods sector, especially in connexion with non seried equipment, orders placed with national industries will be increased, avoiding the tendency to import foreign equipment because of its advantages over Brazilian-made equipment;

ii - opening of new export possibilities for manufactured goods - in areas of higher technological complexity, to complement the exports of traditional industries;

iii - more emphasis on industrial technological development - in order to avoid too heavy expenditures on import of technology;

iv - emphasis on the development of the food industry - supporting the modernization and reorganization efforts of certain traditional industries;

v - reduction of the regional disparities of industrial development - so as to halt the continuing tendency to concentrate activities in a single metropolitan area.

The implementation of this strategy will call for a rapid mobilization of the national and foreign entrepreneurial capacity and a tremendous investment effort. Preliminary estimates point to investment requirements in the manufacturing industries on the order of Cr$ 300 billion for the period of 1975/79. This takes into account the full utilization of existing capacity and a heavier emphasis on basic sectors representing substantial import substitution.

4. Agricultural-Livestock Strategy

The agricultural-livestock sector is expected to contribute a more significant share to the expansion of the GDP, with lower consumer prices, higher producer returns and a higher standard of living for rural workers; to consolidate Brazil's position as a world supplier of food, agricultural raw materials and processed products reducing the deficit in the balance of trade while helping to sustain the dynamism of the remainder of the economy.

This task will call for the expansion of cultivated farming land through the occupation of new areas; progressive agricultural modernization in already settled areas; consolidation of regional diversification and specialization of agricultural-livestock development and the achievement of a rate of growth for derived animal products over and above the average for crops.

The agricultural-livestock strategy is designed to provide the sector with the means to fully utilize its productive potential; to expand the stock of productive resources by attracting domestic and foreign savings and entrepreneurial capacity; to encourage the more intense participation of the private sector in providing support services to the production, transport and processing of farmsproducts; to stimulate the creation, importation, adaptation and diffusion of technologies in accordance with regional peculiarities.

The implementation of such a strategy will therefore entail the following activities:

i - Policy of Land Use for Farming Purposes + aimed at a more rational land utilization and the compatibilization of factor allocation in the regions with the physical and services infrastructure.

ii - Efforts to modernize the agricultural-livestock sector on an entrepreneurial basis, especially in the Center-South - through the dissemination of small-, medium- and large rural enterprises; the systematic use of prouects; the employment of a modern technology; the more intense use of modern inputs; the expansion of agro-industries in view of their role in introducing new technologies and the strengthening of the public sector's activities in the areas of agricultural-livestock research, agricultural experimentation and rural extension.

iii - Implementation of the Agrarian Reform and Land Redistribution Programmes - in areas where the distortions of the land property system jeopardize the sector's development in terms of production and workers' welfare.

iv -New Areas Settlement Strategy - principally in the Center-West, Amazon and Humid Valleys of the Northeast with directives to preserve the local ecology in the practices of land preparation, crop rotation and fallow practices. In order to prevent land from being reduced to subsistence cultivation, care will be taken in the choice of areas to be devoted to agriculture and the establishment of minimum infrastructure and support services will be assured.

v - Continuation of the policy of implementation of new food supply structures.

vi - Strengthening of those public sector activities that may not be delegated to private initiative - such as marketing information, vegetal and animal sanitary protection, product classification and standardization.

vii - Formation of buffer stocks + devised to regularize producers returns and reduce the problem of consumer prices.

viii - Sectoral concentration of incentives - towards the establishment of forestry and intensive farming poles through the rational exploitation of land and water resources.

ix - Social strategy for the rural sector - ensuring producers a larger share of the sector's returns, protection for the small producers, a steady improvement in the real income of rural workers and their inclusion under labour and social welfare laws.

5. National Integration Strategy

The national integration strategy has the following main features:

i - greater economic-political balance between the country's different regions, whether within the Centre-South or other macro-regions vis-a-vis the Centre-South, thus reducing regional disparities. Within this context it should be noted that a new and powerful development pole has resulted from the merger of the states of Guanabara and Rio de Janeiro, establishing a greater geo-economic balance in the most developed nucleus in the country (the Sao Paulo-Belo Horizonte - Rio triangle).

ii - adoption of an effective demographic policy from the economic, social and security standpoint.

Brazilian demographic policy with regard to family planning is to give couples complete freedom of choice as to size of family while, at the same time providing all relevant information that will assist them to come to a decision. This approach takes into account the fact that from the point of view of Brazil's total population, there is still room for a sizeable expansion. In the present decade, the demographic growth rate is expected to fall to between 2.7% and 2.8%, continuing to decrease more rapidly in subsequent decades. Should the growth rate of employment opportunities remain at the present 3.5% per year, thereby continuously exceeding that of population growth, the degree of under-utilization of manpower will be reduced and income distribution levels will be improved favouring the working classes.

iii - Consideration of the Northeast, Amazon and Center-West from a global unified standpoint as regards the inter-flow of production factors and the flow of products, as well as these macro-regions's relations with the Centre-South, from the standpoint of the commodities, capital and technology flows.

The next development stage will be characterized by a more significant contribution of the Northeast, Amazon and the Centre-West to growth of the GDP and by greater inter-regional integration, due largely to the nearly completed transportation and communication infrastructure.

The implementation of the national integration strategy will comprise the following main points:

i - Implementation of the Investment Programme - with federal allocations to the Northeast, Amazon and the Centre-West of the order of Cr$ 165 billions in 1975/79.

ii - Adoption of the "Integrated Areas" approach, especially in the rural areas - permitting the integrated activities of Government and private sector, with the advantage of economies of scale external economies and aglomeration economies through massive investment in growth poles and agro-industrial districts and with a clear cut definition of priorities and physical control of the results achieved by area.

iii - Policy of Land Settlement and guided Agricultural - Livestock Development iv - Application of Science and Technology to Tropical Regions, with particular care for the preservation of natural resources

5.1 Strategy for the Northeast:

The overall policy will be oriented to ensuring an accelerated and self-sustained growth in the region, narrowing its economic gap with the rest of the country.

The Northeast development policy contemplates the following activities:

- Implementation of investments, with federal allocations amounting to Cr$ 100 billions in 1975/79, particularly with regard to the following main industrial development targets: implementation of the Northeast Petrochemical Pole; implementation of the Regional Mineral-Petrochemical Complex; implementation of the Northeast Fertilizer Pole; implementation of the Metal-Mechanic and Electro-Mechanic complex; strengthening of the poles of traditional industries, especially Textiles-Clothing and Leather-Footwear.
- Implementation of the Development Programme for the Northeast's Agro-Industry, comprising cotton, cashew-nuts, castor-oil, manioc pellets and fruit juice projects (Cr$ 1 billion in the period).
- Efforts to convert traditional agriculture, particularly in the semi-arid region, to the market economy, with the following principal actions: Development Programme for the "Integrated Areas" of the Northeast; Northeast Irrigation Programme; Agrarian Reform and Land Settlement Programme; Livestock Programme; Semi-Arid Tropic's Programme.

5.2 Strategy for the Amazon and Center-West:

The main objectives is the productive utilization of these regions on the basis of:

- the use of natural transport routes for the penetration of the Amazon and the Center-West's Regions;
- settlement by selected and non-contiguous areas, concentrating activities in the most fertile lands;
- guidance of export activities taking into consideration clear comparative advantages and dynamic sectors of the international market.

In accordance with these guidelines, the following activities are envisaged for the productive utilization of the Amazon and Center-West regions:

- Programme of the Amazon Agricultural-Livestock and Agro-Mineral Poles (POLAMAZONIA), with investments estimated at Cr$ 4 billions

- Mineral-Metallurgic Complex of the Eastern/Amazon Region, comprising iron ore mining, steel production, (Carajas-Itaqui) and bauxite-alumina-aluminium (Trombetas-Belém) with the investments so far estimated at C$ 16 millions for the first stage.
- Development Policy for Amazon Forestry Resources and Rational Use of Soil, aiming at the rational exploitation of forests and the development of cellulose production techniques with a variety of different woods, and the implementation of an intensive forestry research programme;
- Conclusion of the Industrial District of the Manaus Free Zone and Implementation of the Agricultural-Livestock District;
- Speical Development Programme for the Pantanal Region (PRODEPAN);
- Special Development Programme for the Geo-economic Region of Brasilia;
- Programme of the Humid Tropics (Amazon);
- Programme of the Savannah Region (Center-West)

6. Social Development Strategy

The Brazilian income distribution structure, mirroring that of other countries at a similar development stage and with comparable income levels, is unsatisfactory and is not endorsed by the Government.

Economic growth by itself, if left to simple market forces, may not be able to solve the income distribution problem; furthermore, if a solution is expected to be derived from growth alone, it may be delayed for a period longer than that which social conscience would allow.

Although rapid growth is an important instrument in helping to harmonize the objectives of providing more income and consumption possibilities to all, as well as stimulating higher investments, the Government feels that it must be accompanied by a policy for income distribution.

The social policy to be adopted in the forthcoming stage, therefore, will not be a mere consequence of economic policy, but rather will have its own objectives and priorities designed to ensure:

- a substantial increase in incomes for all classes especially for the working and middle-classes, by providing a wide spectrum of economic and social opportunities;
- a substantial reduction of pockets of poverty.

The bases for implementation of the social strategy are as follows:

i) Combination of the Employment Policy with the Wage Policy, so as to permit an expansion of the mass consumer market.

The employment policy will be focused on the expansion of employment opportunities at rates in excess of 3.5% a year, permitting a pronounced reduction of underemployment, since the total number of new jobs, available will exceed the growth in the manpower supply, estimated at 2.9% a year. In addition to the expansion of job opportunities, the employment policy will attempt to improve the operation of the labour market through a network of employment agencies (National Employment System) available free of charge to the least qualified of the job seeking population.

The wage policy, through annual adjustments, will guarantee an increase in real average salaries with the incorporation of the growth of labour productivity.

ii) Human Resources Policy, with investments budgeted at C$ 267 billions for the period 1975/79, in education, vocational training, health, medical assistance, sanitation and nutrition.

iii) Policy of Social Integration, with funds of the order of C$ 384 billions designed to:

Ensure that the worker benefits from the expansion of the national income, by way of the universal spread and refinement of fringe benefits and other indirect supplements to the income and savings of the working class, through such means as the Social Integration Plan (PIS), Civil Servants Assistance Programme (PASEP) and the housing policy.

Reorientate the housing policy towards programmes catering for low income groups, gradually reducing the financial burden that house purchasing transactions represent for families within the latter group and; improve basic urban services with a view to raising the quality of life in the cities.

Extension of social security benefits to progressively cover new sectors of the population, particularly those less favoured, along the lines of actuarial and financial criteria.

Ensure the progressive universal spread of the labour legislation.

iv) Consumer Protection Policy, designed to minimize the prices of basic consumer goods, to guarantee the quality of drugs and the quality and safety of means of transportation.

7. Sientific and Technological Development Strategy

The scientific and technological development strategy is intended to ensure that modern knowledge is used effectively and as a high priority to help attain the general goals of Brazilian society, including its social and human aspects as well as to guarantee the quality of life and preserve the country's natural resources.

The scientific and technological policy will be guided along the following basic lines:

- The preservation of balance between fundamental and applied research (technology), as stages in an organic process, simultaneously avoiding a brain drain and the isolation of the scientific system that might result from an undue emphasis on basic research and the urgent and disruptive nature of social priorities, generated by the exaggerated weight of applied research;

- In the tecnological field, the transfer and adaptation of technology already available in developed countries in a number of sectors, without prejudicing the development of national technology including that in complex areas, on a selective and rational basis.

- The avoidance of waste in the exploitation of natural resources, particularly non-renewable ones and the increase in the technological content of those aimed at foreign markets and, simultaneously, the adoption of rational environmental pollution-control measures without limiting the development of productive activities.

The scientific and technological policy will take into account the following priorities:

1) In the area of technology

- Development of new technologies (nuclear energy, research into non-conventional energy sources, space activities, oceanography), absorbing existing know-how and applying it to help solve national problems.

- Industrial Technology:

- technological development of basic industrial sectors of high technological content (electronic, capital goods, chemical and petrochemical, iron and steel metallurgical and aeronautical industries);

- implementation of most recent R and D projects which although of small and medium scale, may eventually result in industrial projects of high technological complexity;

- research efforts undertaken by large national and foreign companies and technological updating of small and medium enterprises in selected sectors;

- Infrastructure Technology, to ensure that the energy, transport and communication sector keep a breast with the level of international technology.

- Agricultural-Livestock Technology, with the implementation of a permanent and intensive research programme on basic products; in the control of pests and plagues and in the implementation of food technology and savannah research programmes.

- Technology Applied to Regional Development, with the implementation of the Humid Tropics and Semi-Arid Programmes, in the Amazon and Northeast respectively.

- Technology in Social Areas, with emphasis on the Health and Education sectors, especially in the Health sectors, the development of research programmes into the elimination of endemic diseases and the nutrition of large population groups and in the Education-sector the selective expansion of post-graduation programmes and application of the progress achieved in educational technology.

ii) In the area of basic research

- Implementation of the Second Scientific and Technological Development Plan, with planned investments of C$ 22 billions over the five-year period.

- Engagement of private and public enterprise in technological modernization and innovation by means of:
  - refinement of the policy for foreign technology transfer so that the technologies to be imported are selected on the basis of the product, process, relevance for national development and possibility of a national solution for the technological problem; flexible use of the world patent system to expand the choice of options, increase the bargaining power of national enterprise and control the imports of foreign companies; promotion of the adaptation, absorption and local dissemination of the imported technology;

  - expansion and intensification of the activities of industrial property, metrology, quality standardization and certification;

- Creation of financial and/or fiscal incentives to encourage large national or foreign concerns to undertake research on technological adaptations or innovations;

- establishment of programmes for the transfer of modern technology to small and medium-size companies;

- Government support for the creation, through private initiative, of research institutions;

- strengthening of national consultancy firms in the area of processing , production and detailing engineering;

- implementation of the National Post-Graduation Plan.

- establishment, in the public sector, of a Scientific and Technological Research team.

8. Programme of Investments and Financial Support of Official Banks

In order to attain the above-mentioned objectives and given the priorities established, an Investment Programme will be implemented in 1975/79, as illustrated and summarized in the table below,highlighting the following aspects:

- The social budget, comprising Human Resources (education,public health, medical assistance, sanitation, nutrition, vocational training), Social Integration and Urban Social Development, have allocations of the order of C$ 760 billions worth of new resources; the Education and Health sectors were granted preferential treatment under the Pluriannual Investment Budget (OPI) for

1975/77; in addition to the National Housing Bank's activities in the field of housing and urban infrastructure, the Federal Savings Bank will provide financing for the Education and Health sectors (complementing its activities in the area of housing financing);

- In the area of Economic Infrastructure, with total investments of Cr$ 439.4 billions, the programmes for Energy (Cr$ 255 billions) Railway Development (Cr$ 28 billions), Naval Construction (Cr$ 23 billions) and Airport Construction and Modernization (Cr$ 7,4 billions) should be noted;

- Scientific and technological development activities will be allocated federal funds in order of Cr$ 22 billions for investment in basic and applied research;

- In view of the need for a rapid expansion of industrial productive capacity (especially in basic sectors such as capital goods, iron and steel, basic inputs, chemicals), a sizeable industrial investment is necessary. A total of Cr$ 300 billions have been earmarked, of which Cr$ 254 billions will be directed towards basic industries;

- The Agricultural-Livestock sector, which was given one of the highest-growing allocations in the Pluriannual Investment Budget, will be apportioned Cr$ 56 billions worth of Government (including State) funds. In addition to this, the balance of total investment of official banks in agricultural-livestock activities, at 1975 prices, is expected to increase from Cr$ 51 billions in 1974 to approximately Cr$ 100 billions in 1979, not including private investment;

- In the area of National Integration, Cr$ 165 billions will be invested in regional development activities: Cr$ 100 billions for the Northeast and Cr$ 44 billions for the Amazon region.

Complementing this Investment Programme, the federal banking system plans investment in the order of Cr$ 260 billions, exclusively with new resources, through the National Economic Development Bank (BNDE), Central Bank (special funds), Bank of Brazil, National Housing Bank, Federal Savings Bank, Bank of the Northeast, Bank of the Amazon and the National Cooperative Credit Bank.

INVESTMENT PROGRAMME (1975/79)

	Cr$ billions - 1975 prices
HUMAN RESOURCES	267
Education	135
Nutrition, Health and Sanitation	110
Labour and Vocational Training	22
SOCIAL INTEGRATION	384
PIS-PASEP	58
Housing	83
Social security	243
URBAN SOCIAL DEVELOPMENT	110
ECONOMIC INFRASTRUCTURE	439
Energy	255
Transport	134
Communication	50
SCIENTIFIC AND TECHNOLOGICAL DEVELOPMENT	22
INDUSTRY	300
Basic Industries	254
Other Types	46
AGRICULTURAL-LIVESTOCK ACTIVITIES	105
Public Sector Expenditures	56
Official Financial Support	49
NATIONAL INTEGRATION	165
Regional Programmes, PIN and PROTERRA,	73
Fiscal Incentives	79
Federal Government transfers	38
Official Financial Support	54

CHAPTER II

METHODOLOGY FOLLOWED IN THE PREPARATION OF THE UNDP COUNTRY PROGRAMME

The system adopted for the preparation of the Country Programme involved three different stages:

a) appraisal of previous experience and definition of the general guidelines for the current programme;

b) identification of potential projects;

c) final selection of projects.

In the first stage, an evaluation was made at the programme and project levels for the period 1972/76 so that past experience could be improved, the programming system refined and the general directives of the present Programme defined along the lines of the Second National Development Plan. This exercise produced a Planning Document that became the basis for the preparation of the Second Country Programme.

The conclusions of the evaluation of the 1972/76 Country Programme as well as the recommendations and general guidelines followed in the preparation of the Second Country Programme are described in Chapters III and IV respectively.

The second stage (project identification) consisted of a number of sectoral meetings. Each meeting, under the coordination of SUBIN, was attended by representatives of the Division of Technical Cooperation of the Ministry of Foreign Affairs, the National Council for Scientific and Technological Development, - CNPq - Planning Institute - IPLAN - FINEP and the respective sectoral Ministry. In cases involving more than one Ministry, joint meetings were held in addition to the private meeting with each Ministry.

The purposes of the meetings were:

a) to analyse the need, possibility and desirability of extending ongoing UNDP technical cooperation projects; and

b) identify new projects and/or new ideas for projects where UNDP technical cooperation would be necessary, possible and convenient.

With regard to ongoing projects, a brief explanation of their goals and achievements was given, and eventual requests for extension were discussed. In addition to the general criteria laid down in Chapter IV, this analysis took into account the undesirability of over-extending the projects. Joint missions were undertaken whenever necessary, with the participation of the above-mentioned institution, for "in sitio" appraisals of project implementation and extension requirements.

With regard to new projects, an analysis was made of the relevant chapters in the Second National Development Plan, the Second Basic

Plan for Scientific and Technological Development and other Government plans, in order to identify, among the priority projects defined in such documents, those which:

1) were consistent with the general criteria set forth in Chapter IV, and

2) had a foreign component to be filled in the way of technical cooperation. The basic approach was, therefore, to channel UNDP cooperation to certain of the Government's priority projects.

This study pinpointed 91 projects (new and extensions), that would entail a UNDP contribution of about US$ 103 million, in addition to approximately US$ 285 million representing the Government's own counterpart contribution in cruzeiros.

The third stage was dedicated to the final selection of the projects to be included in the Country Programme as top priority. The selection was made by the Interministerial Technical Cooperation System, that is SUBIN of the Secretariat of Planning, and the Technical Cooperation Division of the Ministry of Foreign Affairs, with the participation of the Planning Institute - IPLAN - and the pertinent sectoral Ministry. A thorough revision of the projects had been previously undertaken so as to trim the UNDP contribution to levels consistent with the national IPF limitations. The final selection, in addition to the criteria and general guidelines laid down in Chapter IV, took into account the priority of each project in the light of the sectoral and overall targets established in the Second National Development Plan as well as the inter-connection and complementarity of the various projects.

It should be stressed that the UNDP Office, in response to the requests of the Government, has cooperated expediently and efficiently in all stages of the preparation of the Second Country Programme.

CHAPTER III

THE 1972/76 COUNTRY PROGRAMME: APPRAISAL OF EXPERIENCE AND RESULTS ACHIEVED

The 1972/76 Country Programme was an effective instrument for the programming and planning of UNDP technical cooperation; it permitted such cooperation to be directed to priority sectors and projects, it avoided the dilution of resources in isolated projects and ensured a rational and effective utilization of available funds, with the consequent positive impact on the country's development process.

The results achieved largely reflect the comprehensive and consistent nature of the Brazilian planning system, which includes the coordination of all international technical cooperation through SUBIN of the Secretariat of Planning of the Presidency of the Republic and the Technical Cooperation Division of the Ministry of Foreign Affairs. Another noteworthy factor was the technical-logistic support provided by the UNDP Office in Brazil which, with its sound institutional and organizational structure and efficient performance, contributed substantially to the success of the Programme. The combination of both factors fully justify the programming system.

The UNDP is, at present, the principal source of technical cooperation in Brazil, in qualitative and quantitative terms:

- The UNDP has provided an efficient access to virtually all sources of knowledge in the world, even in certain sensitive areas such as science and technology, providing highly specialized services not available in Brazil;
- UNDP ongoing projects are closely attuned to the goals, targets and priorities established in Government plans and programmes, and most of them are being adequately implemented;
- the Government's directives have been followed, as explained below;
- although there is still room for improvement in the system of project formulation, approval, implementation and follow-up, it is the most effective of all the sources of technical cooperation available to Brazil, due to the Programme itself and other related procedures (periodic revisions, tripartite reviews, etc.), as well as to the already mentioned existence of a competent UNDP office acting as an effective counterpart to the national planning and coordination system.

The Programme, in turn, faithfully reflected the Government's directives and recommendations for UNDP technical cooperation, as mentioned above and in the Programme Revision submitted in 1974.

The principle that "international cooperation shall be oriented towards the creation and strengthening of national institutions in order to maximise the benefits derived from their performance" was embodied, among others, in the following institution-building projects:

- BRA/63/510 -	Food Research and Technology (ITAL)
- BRA/67/524 -	Expansion of Work on Pesticides (Sao Paulo Biological Institute)
- BRA/67/527 -	Centre of Applied Hydrology (IPH)
- BRA/69/543 -	Fishery Research and Development Programme in Brazil (SUDEPE)
- BRA/70/542 -	National Occupational Training Centre (CENAFOR)
- BRA/71/545 -	Forestry Research and Development (IBDF)
- BRA/71/554 -	Training of Merchant Marine Personnel (CIAGA)
- BRA/71/557 -	Personnel Training and Organization of Mail Services (ECT)
- BRA/71/559 -	Modernization of the Brazilian Patent System (INPI)
- BRA/71/560 -	Standardization in Brazil (INPM)

The ratio of Government to UNDP inputs is steadily increasing. At present this ratio is of the order of five to one. From this it may be inferred that the policy of giving "UNDP technical cooperation a catalytic nature so as to maximize the utilization of existing resources" is being fully observed.

The guideline of"UNDP technical cooperation placing greater emphasis on the transfer of know-how and technology, minimizing the equipment component", was also followed. The average UNDP financial contribution to large-scale projects as of 30 September 1975 was as follows: experts - 68%, training - 13%, equipment - 17%, miscellaneous - 2%.

Many of these projects were already underway when the Programme was prepared. Therefore, if only those projects and extensions following the establishment of the above-mentioned guidelines are considered, the percentage represented by the equipment components in the respective budgets would be even lower.

The principle of "concentrating UNDP technical cooperation in large-and medium-scale projects" was also followed. Of the 64 ongoing small-scale projects at the outset of the Country Programme, only 13 remained in September 1975: eight in the Science and Technology sector, two in the Agriculture and Supply sector and three in the Education sector. These projects account for a mere 2.8% of the IPF (US$ 862,200) and are accounted for largely by preliminary missions for the formulation of large-scale projects and by fellowships for specialized training. Between 1972 and September 1975, small-scale projects totalled US $ 1.2 million or 4% of the IPF.

In line with the directive of "concentrating UNDP assistance in scientific and technological development", approximately 60% of IPF funds were channelled into this sector, in addition to certain technological projects listed under other sectors, e.g. BRA/71/556 - Application of Nuclear Technology in Agriculture, and BRA/69/535 - Increase and Development of Wheat Production.

Altogether, UNDP projects of a technological nature add up to 78 per cent of the IPF. The significance of the Science and Technology sector in the Country Programme is further attested to by the fact that technological projects absorbed 89 per cent of the Government's financial contribution to the Programme.

There was a substantial slippage in the implementation of the UNDP contribution vis-a-vis the original estimate. The Programme's anticipated disbursements of 75 per cent of the IPF, that is US$ 23 millions, for 1972/74, was not attained. A new estimate was made in 1974 during the Programme Revision, anticipating a substantial increase in disbursements during 1974, subsequently decreasing in 1975 to slightly below the 1973 total, and in 1976 reaching US$ 3.8 millions. This new projection will not materialize either. In 1973, actual disbursements totalled US$ 5,131,588 and in 1974 US$ 5,366,131 that is, respectively 24 per cent and 37 per cent short of the projection foreseen in the Programme Revision. Actual disbursements in the period 1972/74 were equivalent to about 50 per cent of the IPF, while the Country Programme anticipated 75 per cent for the period.The table below illustrates the implementation of disbursements according to the original estimate, the Programme Revision and the latest estimate.

Year	Original Estimate	Programme Revision	New Revision (September 1975)
1972	7,099,700	4.511,900	4,511,900
1973	9,108,600	6.722,800	5,131,588
1974	6,848,100	8,544,900	5,366,131
1975	4,487,900	6,393,200	7,450,000
1976	2,455,700	3,820,200	7,540,381
TOTAL	30,000,000	30,000,000	30,000,000

This slippage was due to delays in project implementation, largely a result of the drawnout process of recruiting international experts by the UNDP and specialized agencies. Although the Government is aware of the difficulties involved in the procuring of high level experts, it urges executing agencies to expedite the selection process.

Other factors which, to a lesser extent, likewise hindered and protracted the implementation of certain projects were national counterpart insufficiencies or disbursement delays. Most of these problems have been surmounted with the help of specific programmes of financial support to national counterparts, prepared by SUBIN.

The monitoring system designed for large scale projects, based on early tripartite meetings, reports and visits to the project site, functioned smoothly. In general, the implementation of projects has been satisfactory. The problems and delays in certain isolated cases were to be expected in such large and complex programme as that of Brazil. They were duly corrected in time so that any major problem having a negative impact on the Programme as a whole was avoided.

An organic system of systematic evaluation of ongoing projects failed to be implemented. In the Second Country Programme 1977/81, however, on the basis of the existing monitoring and follow-up systems and the experience already gained, it is planned to establish the foundations of an evaluation system permitting a comparative appraisal of the results attained in different projects rather than individual assessments of the rate of achievement of specific goals. The Brazilian Government would like the UNDP to participate in this initiative and to provide technical assistance, if necessary.

Another aspect of the First Country Programme which calls for improvement is the establishment of a mechanism permitting effective control and follow-up of the disbursement and/or allocation of the Government counterpart contribution for each project.

CHAPTER IV

GUIDELINES AND RECOMMENDATIONS FOR UNDP TECHNICAL COOPERATION

With the changes outlined below, the Brazilian Government confirms the continuing validity of the approach and general guidelines established in the First Country Programme (Ref. Chapter III, First Country Programme), which were largely responsable for the innovative nature of the Programme within the context of international technical cooperation in Brazil.

In brief, such guidelines determine that priority shall be given to:

- scientific and technological projects and/or projects involving the training of high-level human resources;
- large-scale projects with a national impact;
- reasonable originality of the project in terms of goals, methodology or approach, and non-availability or insufficiency of national technical resources to tackle the problems the project seeks to solve, highlighting the complementary nature of foreign cooperation; this orientation is in accordance with the "New Dimensions of UNDP Cooperation" as defined by the UNDP Governing Council;
- projects which, because of the sector in which they operate or for any other reason, rule out negotiation of bilateral technical cooperation;
- transfer of know-how and technology, maximizing the expert and training components in each project and minimizing the equipment component. In principle, the latter shall not have a national equivalent of a comparable level, nor shall it be the dominant component in the cost composition of the foreign assistance;
- use of foreign cooperation for the creation and strengthening of national capacity (projects of the institution-building and fostering type), that is, the basic goal shall be to create the national capacity to solve the specific problem arising out of the project and all related problems, rather than to deal with isolated bottlenecks;
- use of foreign cooperation as a catalytic agent to stimulate optimum utilization of national resources;
- the national executing agency's capacity, both from the technical-scientific standpoint and an institutional and organizational standpoint, to receive and effectively assimilate foreign cooperation;
- impossibility or undesirability of having the national executing agency contract and finance the required technical cooperation services.

In addition to the above guidelines, the Country Programme must present a comprehensive and harmonic picture rather than a listing of projects. Hence, the projects included in the present Programme display a much higher degree of complementarity and interdependence than in the previous Programme. This stems largely from the project selection and identification systems described in Chapter II, since the projects selected reflect and relate to the Second National Development Plan, which is the main source of coherence, equilibrium and integration for the Country Programme. Wherever possible, the projects presented in this Programme were grouped into Sub-Programmes.

A noteworthy innovation is the introduction of a system of financial support to UNDP inputs from Government resources up to US$ 12 millions for the whole programme, i.e. 40 per cent of the IPF. Such funds would be used to cover some of the costs normally charged to UNDP for each project, thereby representing additional funding to that provided by the national counterpart agency. The adoption of this mechanism aimed at maximizing the resources contributed by UNDP attests to the importance the Government attributes to U.N. technical assistance and its desire to see the Programme continue implemented and expanding. At the same time, however, the present delicate situation of the balance of payments calls for a flexible handling of this mechanism, permitting payment in non-convertible local currency. In the case of Brazil, where a sizeable share of the IPF represents the local portion of expert salaries, payment of this financial support in cruzeiros is perfectly feasible as about 50 per cent of experts'salaries is paid locally. The exchange transactions effected monthly by the UNDP Office with the Central Bank of Brazil, for example, total over US$ 400 thousand a month, averaging about US$ 5 millions a year.

The Brazilian Government, therefore, requests the UNDP Governing Council to authorize the financial support to be paid in non-convertible local currency in view of the peculiarities of the economic and financial situation which the country is facing. The Government commits itself to liability for exchange fluctuations effecting cruzeiro payments, establishing the corresponding amount in US dollars in each case at the buying rate prevailing on the date of the repass.

One point that should be emphasized is the clear insufficiency of the IPF allocated to Brazil in the light of the country's requirements, accentuating costs of the inputs provided by UNDP, particularly of experts, which constitute the main component of the Brazilian Country Programme. The Government is seriously concerned with the freezing of the Brazilian IPF in the Second Development Cycle. This implies, in actual fact, a reduction in the UNDP contribution at a time when the country's requirements in the way of high-level technology are greatly increasing.

For this reason, the Brazilian Government rejects the notion that foreign technical cooperation be reduced on the grounds that the beneficiary country is developing rapidly. Indeed, while the development process permits that less complex domestic requirements, from the technical-scientific standpoint, are met, its own dynamism generates new and increasingly sophisticated demands. Catering for this new type of demand is the primordial function Brazil attributes to foreign technical cooperation.

The Brazilian Government also feels that the innovating approach that UNDP technical cooperation represents, the Government's planning and control system designed to coordinate foreign technical cooperation and its successful use of it, themselves fully justify the provision of technical cooperation to Brazil. The country assumes the role of a laboratory or valuable testing field to evaluate the effectiveness of technical assistance programmes.

Emphasis must likewise be laid on the Brazilian Government's continual concern and unwavering political determination, herein ratified once more, to share with other developing countries with which it maintains diplomatic relations, notably in Latin America and Africa, the technical-scientific benefits derived from its own development and from the international cooperation it receives.This is not only being achieved through direct bilateral assistance but also through Brazil's participation in UNDP regional projects, which the Government is actively seeking to expand. National projects financed by UNDP have often served as the base for such activities.

The priority the Brazilian Government attaches to technical cooperation among developing countries fits smoothly into this context. Brazil steadfastly supports UNDP measures in accordance with the mandate repeatedly asserted by the United Nations General Assembly and by the Governing Council to include technical cooperation among its most important activities, in two aspects:

- a greater participation of consultants, equipment, sub-contractors and experts from the developing countries in traditional projects financed by the Programme; and
- to encourage horizontal cooperation, i.e. sharing of technological experience and know-how with other developing nations.

In the light of all these factors and circumstances, the Brazilian Government firmly hopes that the IPF assigned for 1977/81 be upgraded, at least to reflect the monetary devaluation.

An increase in the UNDP financial participation would match the more intense efforts and participation of the Government as attested to by the following facts, among others: the 1 to 5 ratio between UNDP and Government inputs in the previous Country Programme and 1 to 8.5 in the present programme; the introduction of the financial support system in the present programme; the substantial amount of Brazilian financial contributions to UNDP and U.N. specialized agencies, totalling more than US$ 4.5 millions per year (1), or 75.9 per cent of the annual IPF; the recent 15 per cent increase in the Brazilian voluntary contribution to the UNDP regular budget; and the technical cooperation activities pursued by Brazil in other developing countries, which amount to a financial contribution far higher than that received from the UNDP.

Another serious concern regards project implementation slippages derived from the drawn-out process of expert recruitment by the agencies. These delays may eventually jeopardize the quality and impact of the projects. It is felt that solutions must be found to this problem. In order to ensure that the views and decisions of the national authorities are considered in the most flexible and expeditious way, the Government recommends the strengthening and increase of the decision-making power of the UNDP Office in Brazil.

Another important recommendation concerns the need to consolidate and improve the present monitoring system, based on Country Programme revisions and tripartite meetings and to define the parameters for a more efficient evaluation system. The Brazilian Government proposes to examine the desirability of enlisting specific technical assistance from the UNDP for this purpose.

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(1) This amount only includes the value of Brazil's yearly contributions to UNDP and the Specialized Agencies which participate in the execution of projects under the Country Programme (UNIDO, FAO, UNESCO, ILO, ICAO, WMO, WHO, IAEA, WIPO, IMCO). Brazil's financial contributions to various other organizations, funds and programmes are not considered in the above amount.

Finally, given the programming nature of the Country Programme document and of the UNDP's working system itself, the projects included herein have been presented in brief form and with estimates of preliminary costs. Substantial ups and downs may develop during the programming period and the Brazilian Government therefore reserves the right to submit to the Council the cancellation, substitution, addition or adjustment of projects submitted here, when this is deemed desirable. Similarly, the interpretation of the criteria, guidelines and recommendations defined here must be flexible and dynamic and, obviously, consistent with the emergence of new factors during the life of the Country Programme.

CHAPTER V

EDUCATION/HUMAN RESOURCES SECTOR

1. Sectoral Strategy:

The strategy devised in the Second National Development Plan is oriented, on the one hand, towards the permanent search for modern humanism, permitting the individual to achieve fulfillment in his multiple dimensions and, on the other, towards his integration in the development process with the aim of creating an open, democratic, pluralistic, prosperous and equitable society.

In this connexion, it is essential to maximize the operational efficiency of education in order to provide the qualified personnel required to meet the vast demands of technological development, as well as the scientific training necessary for the advance of know-how.

The educational system must, therefore, contribute to the upgrading of economic productivity and to improvement in the distribution of wealth, ensuring the continuence of a steady and balanced prosperity.

With this in mind, Government action will be guided by the following principles:

- Educational planning to ensure simultaneous development of the various levels of education within an overall perspective whilst, at the same time, maintaining links by way of functional interdependence;
- The right to permanent and recurrent education, beyond the narrow limits of formal schooling and ranging from basic education and vocational training to the wide possibilities of cultural refinement and enrichment.
- Continual renewal and innovation in the educational process through the promotion and assimilation of new structures and methods;
- Conception of schools as open and flexible entities, capable of linking general educationa with schooling.

The Federal Government's programme for all education levels (basic, high-school, college and non-formal education) will involve the investment of C$ 38 billions (at 1975 prices) over the period of 1975/79.

At all levels, two comprehensive types of programme will be developed:

a) expansion of educational opportunities, basically entailing: the construction, improvement and equipping of schools; a more efficient utilization of school space; a reduction of losses and delays through drop-outs; student support through scholarships, meal subsidies and supply of didactic material; and

b) improvement in educational processes, particularly in the way of organizational reform and administrative modernization; training and specialization of educational administrators and teachers; development of new teaching methodologies; curriculum analysis, updating and upgrading.

The changes experienced in Brazil during the last decade, notably in the way of industrialization and urbanization, are closely tied to the processes of technical innovation and rational division of labour. New professions and specializations are being required in increasing numbers as well as sectoral and regional diversification.

Parallel to the efforts underway in the field of formal education, the Second National Development Plan places special emphasis on programmes of vocational and manpower training at all levels.

In addition to the training of higher level professionals required for the operation of the production system in priority areas, special attention is paid to the consolidation of the manpower planning system and training programmes for workers. In connexion with the latter, manpower training programmes for about two million people will be intensified, particularly in the following areas:

- training for workers and recruits with no professional qualifications;
- upgrading of qualified manpower;
- recycling of workers for new occupations, particularly for those in age groups difficult to absorb into the labor market;
- rehabilitation and adaptation programmes for workers injured in accidents or with other disabilities;
- professional qualifications for household work; and
- handicraft training.

The above-mentioned vocational training activities will be coordinated by the Manpower Secretariat of the Ministry of Labour, involving funds of the order of C$ 150 millions and the participation of a number of agencies such as: SENAI, SENAC, PIPMO, EMBRATUR, INCRA, SUDEPE, BNH, SUDENE, SUDAM, CIAGA, military units, unions, CBA, FAC, state and municipal organizations.

2. The Role of UNDP Assistance

The cooperation requested from UNDP for the sector involves 7 projects, distributed berween 2 Sub-Programmes directly concerned with vocational training, training and manpower planning. These projects are estimated to elicit a contribution in the order of US$ 5.9 millions from UNDP including Government financial support, that is, 15.6 per cent of the total programme. Moreover, the national counterpart contribution to these projects is anticipated to total C$ 380.3 millions. These figures confirm the technical cooperation role that UNDP is called to play in the training of human resources and the importance attributed by the Government to this sector.

It should further be pointed out that, in close association with the Education Sector, UNDP is also being requested to provide assistance in the area of human resources training for scientific and technological research and the strengthening of the national post-graduation system through another six projects, as described in Chapter VII (Science and Technology Sector).

The Sub-Programme concerning the strengthening of the manpower planning system includes the continuation of a project carried over from the previous Country Programme (BRA/70/550 - Human Resources Planning) and a new project directly associated with the latter, designed to support the implementation of a recently created National Manpower Training System.

The Sub-Programme concerned with professional training including a total of 5 projects, is consistent with the Second Basic Plan for Scientific and Technological Development, which recommends that the emphasis placed on post-graduate training must not neglect the existing demand for medium level expertise in sufficient quantity and quality needed for the operation of the production system. Moreover, as pointed out in the First PNPG (National Post-Graduate Programme), the training of specialized manpower must be encouraged to relieve the formal post-graduation system.

Table III of Annex I lists the sub-programmes and projects in this sector with the corresponding cost estimates.

3. Projects:

3.1 Strengthening of the Manpower Planning System Sub-Programme

3.1.1 BRA/70/550 - Human Resources Planning

I) Objectives:

To provide assistance in the strengtheining and upgrading of the national system of human resources planning. The project is devised to play a catalytic role so as to promote the coordination of SEPLAN with the Ministries of Education, Labour, Interior and Health and Social Welfare. It includes the following areas:

a) Information - including occupational classification, labor statistics, information on university education, estimated educational costs;

b) Studies and Research - in the areas of employment and education;

c) Planning and Follow-up - including educational planning, internal migration, regional planning, establishment of a national employment and simplified medical system;

d) Training - through courses in Brazil and fellowships in foreign countries.

An evaluation mission recently analysed the project and it its recommendations to expand the project's objectives are being considered

II) Function of the Project in the Programme: this project has been an important instrument in the planning of the sector's activities. In addition, projects BRA/76/014 - Establishment of the National Manpower System and BRA/75/011 - Rural Professional Training, are branches of areas encompassed by this project and are closely linked to it. It is likewise related to the subsystem of the agricultural sector of human resources planning and training through project BRA/71/553 - Agricultural Planning and Training. Furthermore, it provides the basic orientation to all projects under the sub-programme "Training of Technical-Professional Personnel".

III) Government Contribution: Cr$ 15,895,000 (1972/78).

IV) UNDP Contribution:

a) The project started in 1972 and the total UNDP contribution through 1978 is budgeted at US$ 2,223,452.

b) UNDP contribution under the Second Country Programme:

	1977	1978	TOTAL
Experts	360,000	360,000	720,000
Training	86,762	43,400	130,162
	446,762	403,400	850,162

V) Executing Agency: UNDP in association with ILO, UNESCO and possibly WHO.

Counterpart Agency: National Human Resources Centre (CNRH) (Coordinator) and organs of the Ministries of Education, Interior, Labor, Health and Social Welfare.

3.1.2. BRA/76/014 - National Manpower Training System

I) Objectives: to provide advisory services to the Manpower Secretariat of the Ministry of Labour in coordination with the National Manpower System so as to attain the following goals:

a) the planning, administration and evaluation of professional training programmes in the three sectors of the economy;

b) to provide technical assistance to vocational training Institutions and related enterprises;

c) to utilize applied methodologies in vocational training and to collect technical-didactic material;

d) to establish criteria for the follow-up and evaluation of vocational training courses.

The project is, moreover, intended to provide assistance in the implementation and consolidation of the National Service of Rural Vocational Training (SENAR), in the continuing on from project BRA/75/011 - Rural Professional Training.

II) The Function of the project in the Programme: it is related to project BRA/70/550 - Human Resources Planning - implementing and furthering the activities and recommendations concerned with manpower planning, and project BRA/75/011 - Rural Professional Training, of the First Country Programme. In addition to this, the project is designed to orient and provide consultancy services for the projects included in the subprogramme "Training of Professional Personnel".

III) Government Contribution: Cr$ 231,600,000

IV) UNDP Contribution: the estimated UNDP contribution is US$ 966,000. The project is scheduled to start in 1978, as a follow-up to project BRA/70/550, and terminate by 1980.

V) Executing Agency: ILO

Counterpart Agency: Manpower Secretariat of the Ministry of Labour.

3.2 Professional Personnel Training Sub-Programme

3.2.1 BRA/76/015 - Training of Merchant Marine Personnel

I) **Objectives:**

The naval construction programme with estimated investments of US$ 3.3 billions envisages the expansion of the Brazilian fleet to 10 millions tdw in 1979. Manpower training requirements for the operation of such a fleet are anticipated at 500 to 600 trainees per year in order to obtain the essential effect expected from this plan. This number of trainees will call for an annual capacity of 1,200 students.

In an initial phase, CIAGA has already been provided assistance in the expansion of the capacity of basic vocational training for Merchant Marine personnel, adjusting the education and training infrastructure to accord with the sophisticated level of naval construction programmes. At the end of this assistance, CIAGA reached a capacity of 800 students per year. The Second Country Programme contemplates the implementation of assistance services to CIAGA, in Belém, with the initial training of 200 students per year.

II) **The Function of this project in the Programme:** it is related to the Government's activities in sub-sectors "Infrastructure Technology: Transports" and "Industrial Technology" (Naval Construction).

III) **Government Contribution:** ₢$ 116,401,471 (1970/79).

IV) **UNDP Contribution:**

a) the project started in 1970 and UNDP contribution through 1979 is estimated at US$ 2,813.200.

b) UNDP Contribution under the Second Country Programme:

	1977	1978	1979	TOTAL
Experts	90,000	90,000	90,000	270,000
Training	21,000	31,500	21,000	73,500
Equipment	600,000	600,000	-	1,200,000
Total	711,000	721,500	111,000	1,543,500

V) **Executing Agency:** IMCO

Counterpart Agency: Ministry of the Navy.

3.2.2 BRA/74/001 - Establishment of a Foundry Centre in Itaúna

I) **Objectives:**

To provide advisory services to SENAI of Minas Gerais in the implementation of the Itaúna Foundry Centre, designed to provide professional and in-service training to foundry personnel; to provide technical assistance to foundry plants; to conduct applied research in the foundry sector and organize the propagation of technical documentation and abridge translations of technical papers published abroad. The project's emphasis is on professional training and in this connexion a number of courses and teaching materials are being prepared.

II) The Function of this Project in the Programme: given its technical approach, this project is related to other projects in the area of industrial technology, particularly those connected with iron and steel.

III) Government Contribution: C$ 10,785,680 (1974/77).

IV) UNDP Contribution:

a) The project started in 1974 and the total UNDP contribution through 1977 is anticipated at US$ 386,400;

b) UNDP contribution under the Second Country Programme:

	1977	TOTAL
Experts	40,500	40,500
Miscellaneous	2,800	2,800
TOTAL	43,300	43,300

V) Executing Agency: ILO, in association with UNIDO.

Counterpart Agency: SENAI

3.2.3 BRA/74/004 - Aeronautical Training Centre

I) Objectives:

To assist CAT - Aeronautical Training Centre- in the improvement, modernization and expansion of air navigation and means of communication, air traffic and meteorological services used in domestic and international air transport by providing training to the personnel engaged in the maintenance of the modern and sophisticated equipment recently installed or scheduled to be installed in the near future by the Government.

The assistance provided to the Centre includes:

a) the improvement and expansion of its training system, particularly regarding modern air safety and navigation equipment.

II) The Function of the project in the Programme:

In addition to its inter-relationship with human resources training projects, it is related to project BRA/73/004 - Airworthiness Certification - in view of its contribution to aeronautical development.

III) Government contribution: C$ 50,000,000 (1975/78).

IV) UNDP Contribution:

a) The project started in 1975 and UNDP total contribution through 1978 is estimated at US$ 1,503,887.

b) UNDP contribution under the Second Country Programme:

	1977	1978	TOTAL
Experts	312,000	85,000	397,000
Equipment	150,000	--	150,000
Miscellaneous	6,000	4,787	10,787
Total	468,000	89,787	557,787

V) Executing Agency: ICAO

Counterpart Agency: CAT

3.2.4 BRA/74/010 Human Resources Training in Telecommunications

I) Objectives:

The main purpose of this project is to establish a national structure of manpower planning and training and allocation of human resources to the country's telephone companies. The project also envisages the development of standard training programmes, the coordination of training endeavours of national companies, the elaboration and evaluation of work performance standards, the development of guidelines for recycling, personnel promotion and transfer among the companies and, finally, the establishment of a central organization that will encourage and coordinate periodical research and experimentation with the latest training technology.

II) The Function of the Project in the Programme:

In addition to its connexion with projects in the area of human resources training, it is related to project BRA/74,009 - Telecommunications R + D - since human resources and technological research are mutually complementary.

III) Government Contribution: Cr$ 21,831,750 (1975/78)

IV) UNDP Contribution:

a) The project started in 1975 and the total UNDP contribution through 1978 is estimated at US$ 973,600.

b) UNDP contribution under the Second Country Programme:

	1977	1978	TOTAL
Experts	211,800	6,000	217,800
Training	17,850	--	17,850
Equipment	5,000	--	5,000
Miscellaneous	3,900	--	3,900
Total	238,550	6,000	244,550

v) **Executing Agency:** ITU

Counterpart Agency: TELEBRAS

3.2.5 BRA/76/003 Personnel Training and Qualification in Nuclear Energy

I) **Objectives:**

The Brazilian nuclear programme envisages the establishment of 80 nuclear plants by the end of the century. Manpower requirements for 1980 are anticipated at 2,200 people and at 4,500 for 1990. With this demand in mind, the project is designed to contribute to the establishment of the personnel infrastructure required for the development of a nuclear fuel cycle and the introduction of technological components in the country, in line with the Second National Development Plan targets. The project likewise envisages the creation of a Training Centre for Nuclear Plant Operators, within the NUCLEBRAS structure.

II) **The Function of the Project in the Programme:**

The project is closely related with subsectors "Development of New Technologies" and "Infrastructure Technology" as far as energy is concerned.

III) **Government Contribution:** Cr$ 18,822,500 (1977/80)

IV) **UNDP Contribution:**

(US Dollars)

	1977	1978	1979	1980	Total
Experts	79,500	72,000	79,500	24,000	255,000
Training	158,500		158,500	31,500	348,500
Equipment	1,500,000				1,500,000
Miscellaneous	2,000	2,000	2,000	2,000	8,000
Total	1,740,000	74,000	240,000	57,500	2,111,500

V) **Executing Agency:** IAEA

Counterpart Agency: NUCLEBRAS

CHAPTER VI

AGRICULTURAL SECTOR

1. Sectoral Strategy:

As mentioned in Chapter I, the strategy defined for agricultural and livestock development is designed to ensure that Brazilian agriculture progressively becomes a dynamic and modern sector capable of contributing a more significant share to the expansion of the GDP and social welfare. The Government will play a prominent part in this evolution, taking advantage of a number of instruments to achieve the following main objectives:

Expansion of the Agricultural frontier, through:

- investments in the basic support infrastrucuture, concentrating resources in the opening and improvement of farm-to-market roads and the development of a network of transportation, storage, credit and agricultural mechanization services;

- land use policy for farming and livestock purposes, involving the survey and examination of ownership deeds, ratification and legitimization of land tenure on legal bases,

- mobilization of manpower to facilitate the operation of the labor market, opening new opportunities for the reshuffling of agricultural labor on an intra- and inter-regional basis,

- support to the creation of commercial markets for the distribution of agricultural inputs,

- settlement of the Center-West and North following a policy of coexistance and complementarity between enterprises of differing scales with regard to the utilization of certain factors of production and marketing,

- development of research activities consistent with regional priorities,

- intensification of rural extension activities in pioneer areas.

Expansion of Production and Productivity in Traditional areas, through,

- investments in research and extension activities, comprising surveys and studies aimed at the adoption of existing technology, including a greater specialization of research and extension and an emphasis on youth programmes,

- investments in secondary infrastructural support aimed at strengthening the existing basic infrastructure, including investments in highway restoration works particularly farm-to-market roads, in irrigation, rural electrification and specialized storage,

- improvement of marketing practices, including the opening of commercial markets, upgrading of market information services and award of incentives to improve and expand the supply of modern inputs.

Increase the Supply and Improve the Distribution of Modern Inputs, consisting of:

- fertilizers and soil correctives: to promote the adjustment of imports to actual requirements in the light of the world situation prevailing in the sector; to analyse the feasibility of substantially expanding the national production of basic nutrients;

- mechanization: to keep the supply of agricultural machines and implements consistent with the demand level;

- pesticides: adjustment of import requirements in the light of the present world situation, and stimulus to the national production;

- seeds: to intensify their production and distribution and to transfer these incumbencies to the private sector;

- animal feed: to maintain production quality and quantity consistent with cattle-breeding requirements and to analyse the feasibility of replacing certain ingredients by other less expensive ones;

- veterinary products: to promote, through the private sector, the production of vaccines and serum in the required quantity and quality so as to meet the prevailing demand.

2. Role of UNDP Assistance

The assistance requested from UNDP in the agricultural sector comprises a total of 4 projects, distributed between 2 Sub-programmes.

The first Sub-programme envisages the collaboration with the Government in the consolidation of the national agricultural planning system. It extends the assistance provided by UNDP under the first Country Programme via 2 projects: BRA/71/553 - Agricultural Planning and Training, and BRA/72/020 - National Agricultural Documentation System.

The second Sub-programme is composed of 2 projects and is designed to support Government actions in the area of primary product marketing.

The UNDP financial contribution to the projects in this sector was estimated at US$ 2.3 million, that is, 6.1% of the programmed total, including the Government's financial support. The national counterpart contribution is anticipated at Cr$ 108 million. These figures do not include agricultural-livestock technology and research projects which, notwithstanding their connection to the Agriculture Sector, are listed under Chapter VII (Science and Technology).

Projects of the Agricultural Sector are presented in brief form in Table IV of Annex I.

3. Projects:

3.1. Sub-Programme Consolidation of the National Agricultural Planning System

3.1.1. BRA/71/553 - Agricultural Planning and Training

I) Objectives: To assist the Government in the development and application of agricultural planning techniques and the establishment of an effective institutional structure for regional and state planning activities. The project is intended to provide assistance in agricultural planning activities, particularly those related to the elaboration of the annual supply and production plan, the annual plan of the agricultural public sector and the prospective study on agricultural development in Brazil. It is likewise designed to collaborate in the implementation of basic studies capable of contributing to the formulation of policies in the following main areas: incentives (prices,credit, taxation and fiscal incentives), technological modernization, marketing and auxiliary services, development of agro-industries, nutrition,agricultural credit.

II) Function of the Project in the Programme: It extends the scope of project BRA/70/550 - Human Resources Planning - into the agricultural sector as far as training is concerned. Furthermore, it is closely connected with project BRA/72/020 - National System of Agricultural Documentation and Information - by supplying feed-back data to the agricultural planning process. It is also related to project BRA/76/014 - National Manpower Training System - as far as agricultural training is concerned.

III) Government Contribution: Cr$ 78,530,000 (1971/79)

IV) UNDP Contribution: (in US$)

a) The project started in 1971 and UNDP total contribution through 1979 is estimated at US$ 1,962,900. The cost-sharing of the Ministry of Agriculture is US$ 877,500, adding up to a total of US$ 2,840,400.

b) UNDP Contribution under the II Country Programme:

	1977	1978	1979	TOTAL
Experts	492,000	492,000	380,000	1,364,000
Training	99,500	-	40,000	139,500
Equipment	1,000	1,000	1,000	3,000
Sub-Total	592,500	493,000	421,000	1,506,500
Cost Sharing(Min.Agriculture)				637,500
Total				869,000

V) Executing Agency: FAO

Counterpart Agency:SUPLAN/Ministry of Agriculture

3.1.2. BRA/72/020 - National System of Agricultural Information and Documentation

I) Objectives: To assist the Government in the establishment of a national system of agricultural information and documentation for the purposes of collecting, analysing, processing and propagating information and documentation relevant to agricultural development in Brazil. It is also intended, under this project, to reorganize the central agricultural library of the Ministry of Agriculture, conduct an inventory of the agricultural documents existing in Brazil, analyse and classify data for future diffusion and establish a telecommunications network among the institutes belonging to the information system.

II) Function of the Project in the Programme: In addition to its association with the remaining projects in the agricultural sector, this project is directly relevant to other activities in the area of basic information for integrated development, especially to projects BRA/72/024-Biomedical Information, BRA/71/559 - Patent System, and BRA/70/550 - Human Resources Planning.

III) Government Contribution: C$ 29,473,600 (1973/79)

IV) UNDP Contribution (in US$)

a) The project started in 1973 and the UNDP total contribution through 1979 is estimated at US$ 735,400.

b) UNDP Contribution under the II Country Programme:

	1977	1978	1979	TOTAL
Experts	65,500	120,000	60,000	245,500
Sub-contracts	15,000	-	-	15,000
Fellowships	8,100	72,000	43,400	123,500
Total	88,600	192,000	103,400	384,000

V) Executing Agency: FAO
Counterpart Agency: EMBRATER

3.2. Sub-Programme Marketing of Primary Products:

3.2.1. BRA/76/017 - Centre for Human Resources Training in Agricultural Product Marketing

I) Objectives: To refine the agricultural product marketing practices of small farmers, co-operatives and urban marketing and consumption centres, with emphasis on the rural zone and particularly the Northeast, through the implementation of the Centre for Human Resources Training in Agricultural Product Marketing.

The project is designed to prepare the Centre to render the following services: a) feasibility studies for the offering of new markets, such as dispatcher markets, wholesale markets, food processing, classification, storage and distribution; b) updating of marketing methods, including the promotion of voluntary food chains; c) training of producers, wholesalers, retailers, agricultural extension personnel and small - and medium-sized firms and preparation of didactic material; d) counselling services to Universities at graduate and post-graduate levels so as to strengthen their agricultural training and food marketing programmes; e) promotion of the services of information analysis on company prices for vegetable and dairy products.

II) Function of the Project in the Programme: It is related to project BRA/71/553 - Agricultural Planning and Training - since SUPLAN is the organ that plans the production and marketing of agricultural produce. Moreover, it is connected to project BRA/75/024 - Marketing of Fish Products - as far as the marketing approach is concerned, and to all the projects pertaining to sub-programme "Professional Personnel Training" on account of the activities carried out under those projects.

III) Government Contribution: C$ 9,541,513

IV) UNDP Contribution: The estimated UNDP contribution is US$ 539,100. The project is scheduled to start in 1978, with an anticipated duration of 3 years.

V) Executing Agency: FAO
Counterpart Agency: COBAL/Ministry of Agriculture

3.2.2. BRA/75/024 - Development of Fish Product Marketing

I) Objectives: The marketing of fish products is a serious bottleneck and key element in the development of the fishery sector, since price fluctuations undermine a production expansion and the precarious distribution system prevents a satisfactory growth of consumption. Consequently, the present project is designed to analyse the present structure of the domestic market and demand distribution, elaborating a marketing plan for fish products; to conduct feasibility studies with a view to upgrading distribution and transport infrastructures and to prepare detailed plans to be submitted to domestic and foreign financing institutions; to advise SUDEPE on the planning and implementation of fish consumption promotion and consumer education programmes and to undertake marketing demonstrations and tests in public and in institutions.

To create a Data Bank on national and export markets for fish products. To train personnel in marketing practices so as to provide assistance to fishery industries and fish distribution enterprises.

II) Function of the Project in the Programme: It is related to project BRA/71/553 - Agricultural Planning and Training with regard to marketing plans for agricultural-livestock products and to project BRA/76/017 - Centre for Human Resources Training in Agricultural Product Marketing, complementing the marketing aspect of that project. It is also related to the activities developed under SUDEPE project BRA/69/543 - Fishery Research and Development, included in the First Country Programme.

III) Government Contribution: C$ 9,000,000.

IV) **UNDP Contribution** (in US$)

	1977	1978	TOTAL
Experts	153,000	240,000	393,000
Training	18,900	50,400	69,300
Equipment	80,000	-	80,000
	251,900	290,400	542,300

V) **Executing Agency**: FAO

Counterpart Agency: SUDEPE

CHAPTER VII

SCIENCE AND TECHNOLOGY SECTOR

1. Sectoral Strategy

The goals of the science and technology policy cannot be defined independently of the national development strategy, from which they are derived. Thus, the guidelines and proposals of the Second Basic Plan for Scientific and Technological Development (II PBDCT) for 1975/79 stem from the scientific and technological requirements resulting from the national development project defined in the Second National Development Plan, as outlined in Chapter I of the present Programme. This section summarizes the inferences, implications and composition in the area of science and technology, of the overall policy laid down in the Second National Development Plan, as well as an explanation of the specific sectoral strategy defined therein, which is summarized in item 7 of Chapter I.

The Second Basic Plan for Scientific and Technological Development, following the general lines established in the Second National Development Plan, contemplates the following main areas of activity:

Development of New Technologies

Infrastructure Technology

Industrial Technology

Agricultural and Livestock Technology

Technology Applied to Regional And Social Development

Scientific Development and Training of Human Resources for Research Activities

Supporting Technical Scientific Activities.

The main guidelines established for each of the above mentioned areas are summarized below:

1.1 Development of New Technologies

With regard to the development of new technologies the II PBDCT emphasises the following areas: nuclear energy, space activities, marine resources and non conventional sources and forms of energy.

1.1.1 Nuclear Energy

By the end of the present decade, nuclear energy is anticipated to account for a significant share of the electric power generated in the country. Furthermore, the Government plans to intensify the peaceful utilization of nuclear science in a number of socio-economic fields, notably in agriculture, medicine and in industry in general, and steel and iron in particular.

In this connexion, the following main sectoral objectives have been established:

intensification of research, followed by an evaluation of national uranium deposits, as well as thorium and other materials relevant to the fuel cycle;

production of nuclear fuels in the country, through the progressive introduction of fuel plants, including uranium enrichement units;

development of production methods and techniques for nuclear fuels;

intensification of basic and applied research as well as experimental development with a view to establishing a national technology and training research teams in Brazil;

promotion of the installation of nuclear reactors using national fuels, with the expanding utilization of national components;

dissemination and promotion of the application of nuclear techniques in the various sectors of human activities, as well as training and specialization of the teams;

progressive engagement of national enterprise in the nuclear materials and equipment industry;

regulation and control of activities related to the nuclear sector, including the application of safeguards.

1.1.2 Space Activities

The establish guidelines are largely designed to ensure the continuation and expansion of the training and upgrading of scpecialized technical personnel with a view to utilizing space technology for the development of areas such as remote sensors, communications, meteorological studies, etc. The following objectives are emphasized:

to permit the growing participation of Brazil in the field of space activities;

to develop a basic infrastructure for aerospace engineering in the areas of propulsion, aerodynamics and structures, instrumentation and control, with special emphasis on the training and upgrading of human resources;

to develop the use of space techniques in the survey of natural resources, weather forecasts and compilation and treatment of geodesic data for cartographic purposes;

to develop satellite communication systems and methods;

to adapt technology to national conditions.

1.1.3 Marine Resources

A rational exploration of the sea is particularly important in the case of Brazil because of the vast area of the continental shelf and the advantages to be derived from the expansion of the national territorial sea to 200 nautical miles.

The scientific and technological policy devised for this sector is intended to promote the integration of the Brazilian territorial sea and to expand the research and utilization of the economically significant live, mineral and energy resources in the water, soil and subsoil.

The main guidelines for the sectoral activities that will be reflected in specific projects are as follows:

upgrading of oceanographic research institutions for the intensification of research works on the prospection and exploitation of marine resources, with regard to their physical, chemical, geological and biological aspects:

permanent establishment of the National Oceanographic Data Bank.

1.1.4 Non conventional Energy Sources

The research conducted in this sector will focus not only on the technology of nonconventional energy generation rendered economically competitive in the wake of the new world energy situation, but also on the rational and orderly utilization of generated power and its environmental impact.

The lines of research under consideration include the exploitation and conversion of solar energy, the integrated utilization of hydrogen both as a potential economic source of power and as an industrial raw material, and the utilization of national coal and controlled nuclear fusion.

1.2 Infrastructure Technology: Energy, Transport and Communications

1.2.1 Energy

The basic areas considered here are electric power and petroleum. With regards to electric power, the guidelines established are designed to develop the advanced technology of electrical equipment and systems required for the expansion programmed for the electric power generation, transmission and distribution system, with the following aspects emphasized;

integrated establishment of basic and applied research infrastructure in the Federal system, especially through the implementation of the Electric Energy Research Centre, CEPEL;

an increase in the national capacity for developing methods of operation in the areas of power generation, transmission and distribution;

the development of the national production of electrical equipment and standardization of products and components;

absorption and development of engineering techniques related to the construction and operation of nuclear plants.

In connexion with petroleum technology, the Government's basic objectives are:

to create a nucleus of transfer of know how, capable of assimilating and disseminating techniques within PETROBRAS;

to promote permanent technical expertise that will produce expedient solutions to the technological problems arising in the operational area;

to develop technology in specific priority areas, in order to meet the requirements of the national petroleum industry;

to seek the optimization of technological processes and products being utilized in the light of the specific features of the Brazilian market.

1.2.2 Transport

The scientific and technological policy for this sector is largely designed to strengthen transportation activities so as to achieve highly effective transport infrastructure from the standpoint of efficiency, safety, capacity and comfort, through:

the establishment of scientific and technological bases in the country, that will make possible the development of a national transport infrastructure as autonomous as possible;

support the national consultancy firms, with due regard to their technical scientific capacity for the formulation of processing, product and detailing engineering projects;

support to domestic industry for the production of import substituting equipment and the standardization of products and components:

development of new technologies, especially in the area of urban transport, as well as their adaptation to regional conditions, through a permanently updated capacity to absorb advanced technology whenever it appears in more developed countries.

The actions foreseen in the field of transport encompass the following programmes: Highway Transport , Railway Transport, Sea and River Transport, Urban Transport and Transport Planning Support.

1.2.3 Communications

The action designed to promote the scientific and technological development of communications encompasses the following four fields: 1) telecommunication of the economic infrastructure and broadcasting public services; 2) postal services; 3) antennas, radiation and propagation (telecommunications support via radio and radio broadcasting); and 4) equipment, component and specialized materials.

The main policy guidelines will be as follows:

concentration of funds, coordination and follow up of studies and research entrusted to institutes and centres associated with the Federal Administration;

decentralized implementation through industrial firms, operating concerns and university centres;

support to official research institutions and development of industrial firms and other concerns operating communication services, by way of a policy of equipment and component standardization, technical standards and quality certification;

identification of the most promising areas for Brazil in the international field of communications and electronic research, from the standpoint of know how absorption, adaptation to national conditions and experimental development for the transfer of the technology to industry.

1.3 Industrial Technology

The industrial technology policy is basically oriented towards ensuring the supply of the technology required for the expansion and modernization of the Brazilian industrial complex, simultaneously promoting a closer participation of domestic technical know how in catering to that demand.

This policy will follow three parallel directions:

Consolidation of the country's industrial technological infrastructure and development of the Governments's regulating action, especially through:

the implementation of a comprehensive programme of industrial standardiation, comprising metrology, standardization and quality control and certification;

modernization and consolidation of the industrial property system:

establishment of a technological documentation system oriented towards the priority requirements of industrial development;

the strengthening of project engineering and consultancy activities in the country.

Support to national concerns and to technological development of industrial priority sectors, highlighting the following aspects:

selection of technologies to be imported, when unavailable in Brazil, and strenghtening of the negotiating power of national concerns aimed at reducing the costs involved in the transfer of technical know how;

rapid and efficient assimilation and adaptation of foreign technology;

implementation of research centres within large national concern or joint research ventures, as well as a more intense use of the services of research institutions by the national production system;

support to research activities and to the programming of product and manufacturing engineering, particularly in the area of capital goods;

development of the national capacity to create and adapt technologies in the area of basic inputs: steel products, non ferreus metals, chemicals and petrochemicals, fertilizers, pesticides and cellulose;

development of the technology required for the implementation of agro-industrial complexes, notably in the area of food, technology in view of its significance for the improvement of the population's standard of living;

the search for and adaptation of foreign technologies and the carrying out of research on the development of national technology in the production of pharmaceutical industry;

modernization of traditional industries;

upgrading of technological content of the export-bound industrial production;

support to the strengthening of the managerial capacity of national firms;

activation of the employment generation process, both from the quantitative standpoint by opening new production sectors, and the qualitative standpoint by providing national technicians access to the higher employment opportunities;

improved quality of life of the Brazilian population through the efficient use of technology within the context of Brazilian traditions and culture;

the search for a rational utilization of environmental control and reclamation techniques.

Promotion of a desirable exploitation of national natural resources, particularly mineral deposits, with special emphasis on:

the expansion of mineral production, especially for the purpose of reducing imports, and of increasing exports in quantitative and qualitative terms, through the absorption of technology required for the exploitation of low ore content minerals;

acquisition and development of technology that will permit the definition of parameters for product quality upgrading;

the organization of a data system capable of determining the targets of future technological plans as well as strategies to be pursued.

1.4 Agricultural Livestock Technology

1.4.1 Agricultural Livestock Activities

The science and technology policy for this area is primarily oriented towards:

the concentration of institutional, human and financial resources in the carrying out of research and development projects designed to expand the productivity of national agricultural livestock activities, particularly in light of domestic food demand;

the rational exploration of natural resources and the country's potential as an important world food supplier, particularly regarding coffee, corn, cotton, sugar cane, rice, manioc, wheat, potatoes, beef and dairy cattle, pork and poultry;

implementation of research on the exploitation of little known resources, especially in the Humid Tropics, Semi Arid and savannah regions;

production of raw materials;

implementation of R + D activities ensuring the improvement of labour productivity and a higher share of labour in the income generated by this sector.

1.4.2 Forestry Resources

The programming of forestry activities is designed to:

upgrade technological, biological and economic bases for forestry development;

increase the production of raw materials via the introduction and improvement of rapidly growing species;

promote the preservation of forestry resources and develop their rational exploitation;

conduct an overall survey and evaluation of forestry resources identifying, structually and functionally, their properties and wood potential both in natural and artificial forests;

carry out biological and ecological studies of native varieties with a view to the formulation of reforestation and wood exploitation programmes.

1.4.3 Fishery Resources

The research policy for the exploitation of fishery resources is largely orientated towards:

data collection for planning and implementation of priority projects in this area, notably through fish exploration and prospection;

the carrying out of studies on inland waters and fish cultivation;

the development of a fisheries technology as well as biological and technological studies related to fish marketing activities;

the consolidation of an organizational structure for the implementation of research, integrating the state and university institutions operating in this area, which generally lack human, material and financial resources.

1.5 Technology Applied to Regional and Social Development

In connexion with the application of science and technology to regional and social development, the Second PBDCT contemplates the following main activities: integrated regional programmes, environment, housing and sanitation, health, food and nutrition and educational technology.

1.5.1 Integrated Regional Programmes

In line with the Second National Development Plan, the science and technology policy for regional development is oriented towards the improvement of income distribution and the reduction of regional disparities.

The main programmes to be developed are:

Programme of the Semi Arid Tropics: Designed to encourage the contribution of science and technology to the social economic development of the Northeast semi arid region; this Programme encompasses a wide spectrum of basic and applied research projects in the areas of ecology, drought control, artificial rainfall, vegetal and animal genetic improvement, water use and maintenance, irrigation, dry farming and solar energy.

Programme of the Humid Tropics: Composed of a number of basic and applied research projects designed to establish an effective scientific base for the rational settlement of the Amazon region, its main objectives are:

to lay emphasis on studies directly applicable to settlement and agricultural livestock production programmes, as well as a soil survey with different degrees of detail and studies on local microclimatic conditions;

to clarify such conflicting questions as the effects of deforestation on ecologic conditions;

to seek realistic solutions to problems of preservation of the environment and pollution control;

to broaden knowledge and control of certain tropical human diseases, such as black fever, yellow fever, malaria.

Aripuana Project, for the carrying out of research for the integration, settlement and development of the Aripuana Municipality, with an extension of 150,000 km2 in the State of Mato Grosso. The first stage of the project saw the creation of the scientific city of Humboldt, whose inhabitants are scientists and technicians, and the establishment of the farming colony of Cinta Larga. The second stage will see the establishment of the Gavião Colony.

Savannah Programme, envisaging an overall survey of savannah resources, the carrying out of research and agricultural livestock experimentation activities as well as human resources training for the establishment of a scientific basis for the rational and orderly settlement of selected areas in the Brazilian savannah region covering 1.3 million km2. The Programme is designed to convert 3 million hectares of Savannah region to farming and cattle-breeding activities over a period of 5 years.

1.5.2 Environment

The science and technology policy for this sector is designed to ensure the rational utilization of the country's natural resources to promote social welfare and economic development whilst simultaneously preserving the environment from polluting and predatory actions stemming from indiscriminate exploitation processes.

The emphasis will be on the following priority areas:

permanent follow up of far reaching changes taking place in the environment as a result of human activities or natural causes;

establishment and enforcement of pollution control regulations and standards in the national territory, keeping in mind the essential equilibrium between development and environmental quality, in the light of national reality;

evaluation, forecast and effective control of environmental quality vis à vis polluting agents;

development of ecologic studies designed to support economic and social development programmes.

1.5.3 Housing and Sanitation

The main activities envisaged for the Housing sector are: the definition of housing norms and standards; definition of "model housing units", alternative technology for low cost housing, use of new construction materials and tests and trial use of such materials.

From the sanitation viewpoint, the main objectives are: the refinement of sanitation techniques, the improved performance of scientific and technological services in the sanitation sector, expansion of manpower training for municipal personnel engaged in the elaboration, construction, operation and maintenance of sanitation systems, upgrading of the technological level of the processes designed to overcome sanitation problems.

1.5.4 Health

Research in the health sector in Brazil is largely conducted by universities and the Ministry of Health and, to a lesser extent, by several other federal and state institutions. Although the latter follow the policy guidelines defined for this area, they are naturally influenced by the immediate objectives of their own institutions. Universities, on the other hand, by their very nature, are largely oriented towards basic research.

Thus, one important objective pursued is to assemble a joint information system and a pragmatic integration of the scientific activities and production of the various National Scientific and Technological Development System, in order to enhance their contribution to the solution of health problems.

Basic and applied research in this area shall be focused on two main aspects: Carrying out of studies on technical scientific problems that will provide a greater insight into diseases and their treatment and control; and studies on the organization of medical assistance and epidemic control programmes.

Priority projects shall concentrate on the following activities: control of widespread endemic diseases (malaria, schistosomiasis, Chagas disease, pests, etc.); studies on diseases common to recently explored areas (leishamaniasis, arbovioses, yellow fever, etc.); research on mother child diseases; research on non transmissible diseases (cancer, cardiovascular and certain types of psycho pathologic illnesses); research on occupational health; development of drug technology and control, especially in connexion with vaccines; formulation of an integrated genetics plan.

1.5.5 Food and Nutrition

This area is highly significant for the promotion, safeguarding and improvement of the health of the Brazilian population, particularly in certain regions and age groups.

The basic science and technology approach for this sector aims:

to modify the nutritional conditions prevailing in Brazil;

to mitigate nutrition problems in priority groups (children aged 0-6, pregnant and breast feeding women);

to reduce the incidence of nutritional diseases and achieve an optimum nutritional condition for the Brazilian population.

1.5.6 Educational Technology

The policy set forth for this sector is focused on the utilization of the recent developments in education sciences (educational planning and administration and learning and teaching psychology), as well as in the information and communication sciences, in order to accelerate the process of educational innovation.

In addition to aspects of human resources training, development of data systems and improvement in the physical and equipment infrastructure, three fundamental activities are contemplated:

research aimed at generating new knowledge and technologies;

system of absorption, transfer and application of existing technologies;

system of production of didactic material.

1.6 Scientific Development and Training of Research Personnel

The attainment of the national targets and goals in the area of science and technology implies a close coordination between basic and applied research programmes and post graduate programmes. The areas of research and advanced University training activities currently overlap.

Therefore, the emphasis and priority placed on science and technology implies a similar approach to academic post graduate activities.

There are at present 50 university level institutions (federal, state, municipal and private institutions), providing about 650 post graduate courses (480 at M.A. level and 170 at Ph.D. level), covering 158 Master areas and 68 Ph.D. areas. Up until 1973, approximately 3,500 Masters and 500 Doctors graduated under this system. A comparison of these figures with the 62 post graduate courses (45 M.A. and 17 Ph.D.) existing in 1965 clearly points to the significant advance achieved.

Whilst the process of post graduate expansion intensified after 1968 and significantly contributed to the training of qualified human resources it was, on the other hand, a somewhat isolated and patchwork effort with a great variety of ways and means of financing that created a considerable degree of institutional insecurity which ultimately affected the performance of the courses given.

The main bottlenecks may be summarized as follows:

problems of institutional, administrative and financial stability, due to the fragile links between courses and institutions and the lack of financial security;

Performance problems, with poor attendance rates and an unsatisfactory enrollment graduation ratio stemming from the pressing requirements of the labour market, which have not been adequately met by specialization and improvement courses;

Growth problems in certain areas of sectors where the number of candidates has outgrown available vacancies, creating a bottleneck in other equally strategic and essential sectors; furthermore, the geographic concentration of available courses has encouraged an undesirable post college migration from the hinterland to the capitals.

Starting from this analysis, the First National Post Graduation Plan (IPNPg) defined the following basic guidelines, involving the investment of Cr$ 8.7 billion in 1975/79:

institutionalization of the post graduate system as a regular university activity with guaranteed financial stability;

upgrading of present standards of performance and a more rational utilization of available resources to increase productivity levels and ensure courses of the best possible quality;

careful planning of the expansion of post graduate courses to achieve a more rational distribution among the various regions of the country, so as to relieve the present pressures and increase the effectiveness of investments.

The main targets pursued, as outlined in the First PNPg, are:

Graduation: to promote the complete academic training and corresponding graduation of about 16,800 Masters and 1,400 Doctors in 1975/79.

Capacity: to expand the capacity of national post graduate courses from 7,000 to 11,700 a year for M.A. courses, and from 500 to 1,200 for Ph.D. courses by the end of the 1975/79 period.

To achieve these targets, three interdependent programmes are planned:

fellowship programme, involving 52,000 full time fellowships/year within the country and 7,500 fellowships/year abroad, in 1975/79;

formal programme to qualify teachers, totalling 12,000 teachers in 1975/79;

programme of regular recruitment of teachers, involving the engagement of 12,000 new teachers in 1975/79.

1.7 Technical Scientific Support Activities

In connexion with technical scientific support activities, four main areas were considered: scientific and technologic information; programme of training and administration of scientific and technological research, meteorology and survey of water resources.

1.7.1. Scientific and Technological Information

Scientific and technological information play an important role both at the political administrative level and the technical scientific level as far as decision making, planning, coordination, follow up, evaluation and corrective activities are concerned.

The Second PBDCT foresees the development of an extensive information system that will supply to all these areas related to scientific and technological activities two new types of data: statistical information and specialised data.

1.7.2 Training Programme on Administration of Scientific and Technological Research (PROTAP)

It is aimed to promote the training and/or updating of management expertise in the area of basic and applied research and development activities both in the Government and private sectors.

1.7.3 Meteorology

The activities planned for this area have the following objectives:

expansion of the network of meteorology stations in the country; installation of new stations, restoration and reequipment of existing stations with the introduction of modern equipment and an increase in the number of meteorology observations;

completion of the telecommunications network specifically related to meteorology purposes

microfilming of meteorology data for information purposes:

installation of modern agroclimatologic stations required for specific agricultural research;

dissemination of research such as: water resources survey, atlas clouds, Manaus weather, climatic norms, agroclimatological bulletins, climatological bulletins, weather reports, and so on;

improvement in weather forecasting services;

promotion of personnel training.

1.7.4 Survey of Water Resources

Although water resources are renewed by rainfall and soil retention, their preservation depends on rational and systematic use of water. This calls for a greater insight into the climatological factors influencing hydrology and the identification of hydrographic and underground basins.

Within this context, the science and technology policy devised for this area will attempt to:

locate and define water resources qualitatively and quantitatively;

satisfy the demand for various water uses through the distribution and development of water resources;

assure adequate defence against destructive action of waters with regard to flood and soil protection problems, following the principles of harmonic utilization of water resources in the areas involved;

preserve the quality of the water in line with the principles of rational preservation of natural resources and environmental sanitation;

define the priorities for the activities envisaged under the various programmes and projects;

provide the Government with an instrument to control and improve the utilization of water resources.

2. The Role of UNDP Assistance

Given the important role attributed by the Government to external technical cooperation for channelling technology transfer, the Second Country Programme places emphasis on the science and technology sector. The assistance of UNDP to this sector comprises a total of 51 projects, with a UNDP input estimated at US$ 29.6 millions, which represents 78.3 % of the total Programme (contribution of UNDP and Government financial support). The national counterpart contribution to these projects may reach Cr$ 1.8 billions.

These 51 projects reflect, within the limits of available resources, the priorities the Government has set for receiving technical cooperation from UNDP in the science and technology sector, divided into eight subsectors outlined in the Second Basic Plan for Science and Technology (see Chapter One above).

The first priority within the science and technology sector is the subsector for industrial technology. With 15 projects this subsector constitutes 38.60 % of the science and technology sector and 30.20 % of the total Country Programme. These figures indicate, in addition to the emphasis the Government gives to this subsector, the policy to channel the UNDP assistance to projects for which bilateral assistance is difficult to obtain or unadvisable. The subsector for industrial technology includes two large subprogrammes directly related to governmantal priorities. The first of these, in line with the directive to consolidate the Government's infrastructure for industrial technology, includes eight projects in the area of standardization, quality control and certification and metrology; one project in the area of patents and industrial property; and one project for industrial pollution control. The second subprogramme in this subsector includes five projects in the area of capital goods, petrochemistry and food technology; all of these are included in the Second Basic Plan for Science and Technology (PBDCT). Several other projects should also be mentioned here; for example BRA/74/009 - Research and Development in Telecommunications, BRA/76/007 - Personnel Training and Development of Research at CEPEL, BRA/71/563 Drug Quality Control, and BRA/75/040 Technology of Construction Materials, etc. While these projects are classified under other sectors, they are also related to industrial technology.

Second in importance in the Science and Technology Sector is the subsector Scientific Development and Formation of Human Resources for Research, which accounts for 15.40 % of the sector and 12 % of the total Programme. With a total of six projects in the area of research and post graduate education, this subsector is directly related to the Education Sector (Chapter 5) as well as several other projects of the Country Programme.

The subsector Agricultural Technology occupies third place in the Sector Science and Technology with 12.0 % of the sector and 9.40 % of the total Programmme. The seven projects in this subsector include wheat production, livestock, pesticides, irrigation, and forestry development. The contribution of these projects to the agricultural sector is in addition to the four projects included under this Sector (Chapter 6).

Technology applied to Social Development with a total of nine projects in the fields of health, preservation of the environment, urban development, housing and educational technology, is the fourth area of concentration of the Science and Technology Sector, accounting for 10.60 % of the Sector and 8.60 % of the total Programme.

In the field of development of new Technologies, also stressed in the Second PBDCT, UNDP assistance is to be directed towards the utilization of nuclear energy in socio economic development (two projects), and marine resources (one project).

The subsector of Infrastructure for Technology, which accounts for 7.40 % of the Sector, includes three projects in the fields of transport, electric energy and communications.

With regards to technology applied to Regional Development, UNDP assistance will consist of the continuation of two projects related to study of river basins.

Finally, for Techno Scientific Support Activities the principal role of UNDP assistance will be a survey of water resources under project BRA/72/010 Hydrology and Climatology of the Amazon River Basin and training in the administration of scientific research.

Table IV of Annex I contains a list of the subsectors, subprogrammes and projects for which UNDP assistance is being requested in the science and technology sector. A cost estimate for this assistance on a project by project basis is also included in that table.

3. Projects

3.1 Development of New Technologies

3.1.1 BRA/76/017 Oceanography

i) Objectives

To develop research for the identification and utilization of ocean resources, in their physical, chemical, geological and biological aspects. In a first phase, oceanography research institutes will be upgraded to enable them to carry out the planned research activities.

ii) Function of the Project in the Programme

The project conforms to the expressed guidelines contained in the Second Basic Plan for Scientific and Technological Development. It is also related to the research activities of the projects in the subsector "Strengthening of the National Post Graduation System".

iii) Government Contribution: Cr$ 1,200,000

iv) UNDP Contribution

The UNDP contribution is estimated at US$ 170,000. The project is scheduled to start in 1978 and to terminate in 1979.

v) Executing Agency: UNESCO (possibly)

Counterpart Agency: CNPq/USP

3.1.2 BRA/76/018 Neutron Diffractometry

i) Objectives

Study of structural qualities of cristaline substances by means of neutron diffraction; study of alloy structures and phase transitions (cristaline and magnetic).

ii) Function of the Project in the Programme

This project is a continuation of BRA/70/006, Neutron Diffractometry, included in the First Country Programme. It is related to the Government programme for the development of new technologies.

iii) Government Contribution: Cr$ 3,854,000

iv) UNDP Contribution

The UNDP contribution is estimated at US$ 98,000. The project is scheduled to start in 1978 and to terminate in 1981.

v) Executing Agency: IAEA

Counterpart Agency: "Instituto de Energia Atomica", USP

3.1.3 BRA/71/556 Application of Nuclear Techniques to Agriculture

i) Objectives

To assist the "Centro de Energia Nuclear para a Agricultura (CENA)" to develop its capacity to apply nuclear techniques to agriculture, through the strengthening of training at undergraduate and post graduate level and through research in the following disciplines: soil science, soil fertility and plant nutrition, hydro ecology, plant pathology, entomology, plant breeding and animal breeding. It is expected that once these objectives are achieved, the project will contribute significantly to the solution of specific agricultural problems and will be very useful for the launching of cooperative research programmes at CENA and other centres.

ii) Function of the Project in the Programme

The project conforms to guidelines of the Second Plan for Scientific and Technological Development aiming at stimulating the application of nuclear science in several socio economic fields. It is also related to the projects in the subsector "Strengthening of the National Post Graduation System". More over, it complements almost all the activities of the projects included in the subsector "Agricultural and Livestock Technology", especially Project BRA/69/535, "Increase and Development of Wheat Production". Its relation to hydrological projects (BRA/75/007 Assistance to IPH and BRA/72/010 Hydrology and Climatology in the Amazon) should also be mentioned inasmuch as in these projects the application of nuclear techniques are of special importance.

iii) Government Contribution: Cr$ 48,200,000 (1972/79)

iv) UNDP Contribution

a) The project started in 1972, and the UNDP contribution through 1979 will amount to US$ 1,748,400.

b) UNDP contribution for the Second Country Programme:

(US Dollars)

	1977	1978	1979	Total
Experts	135,000	150,000	135,000	420,000
Training	30,000	30,000	30,000	90,000
Total	165,000	180,000	165,000	510,000

v) Executing Agency: IAEA

Counterpart Agency: CENA

3.1.4 BRA/76/019 Thermal Energy from the Ocean

i) Objectives

To conduct a feasibility study covering the development, construction, testing and operation of a system utilizing the low temperature of resurging sea water along large parts of the Brazilian coast, and insolation in the same areas aiming at comparing solar energy with surface water energy to determine the best hot source/cold source configuration for obtaining electric energy.

ii) Function of the Project in the Programme

The project is linked to activities of the Government Plan in the area of non conventional sources of energy. It is, in addition, related to project BRA/76/017 Oceanography.

iii) Government Contribution: Cr$ 5,883,000.

iv) UNDP Contribution

	1977	1978	1979	Total
Experts	36,000	36,000	36,000	108,000
Training	9,600	9,600	9,600	28,800
Equipment	25,000	30,000		55,000
Total	70,600	75,600	45,600	191,800

v) Executing Agency: UNDP

Counterpart Agency: FINEP

3.1.5 BRA/76/006 Coal Gasification

I) Objectives

The generation of low calorific power fuel gas, particularly synthesis gas derived from gasification of coal, is once again of major importance in view of the oil crisis. This project intends to develop a team to initiate studies on the application of gasification of coal for direct reduction; to assist in the installation and initiation of operations of a Winkler gasification plant; to experiment with several types of Brazilian coal and determine the operation and cost. Additionally, the project will assist with the planning and building of direct reduction plants based on gasification of coal, thus reducing substantially dependence on imported coke.

ii) Function of the Project in the Programme

It is related to the projects in the subsector "Industrial Technology", especially those dealing with the development of metallurgy, such as BRA/75/003, Standardization of Iron and Steel. The project is also linked to the energy programme of the Government.

iii) Government Contribution: Cr$ 15,600,000.

iv) UNDP Contribution

The UNDP contribution is estimated at US$ 579,000. The project is scheduled to start in 1978 and to terminate in 1980.

v) Executing Agency: UNIDO

Counterpart Agency: Ministry of Mines and Energy.

3.1.6 BRA/76/020 Study of Bio Conversion of Crops for the Production of Alcohol

i) Objectives

Because of the energy crisis and the need for an adequate supply of fuel the production of alcohol has been acquiring increasing importance. This project aims at furthering the production of certain crops such as manioc, sugar cane and others, to obtain alcohol through the better utilization of solar energy through bio conversion. It is divided into two parts:

a) a study of present conditions for the production of various crops and the selection of the best varieties; and
b) development of a method for "screening" in the selection studies the new varieties best suited to the production of alcohol.

ii) Function of the Project in the Programme

It is related to the projects in the subsector "Technology and Agriculture and Animal Production", especially with those aimed at the increase of productivity and the genetic improvement of certain crops. It is also linked to the energy programme of the Government and to project BRA/76/019 Thermal

Energy from the Ocean, in that part concerning the use of solar energy, and is indirectly linked with project BRA/76/004 Petrochemical Technology.

iii) Government Contribution: Cr$ 5,531,000

iv) UNDP Contribution

(US Dollars)

	1977	1978	1979	Total
Experts	9,000	9,000	9,000	27,000
Training	3,200	4,800		8,000
Equipment	73,500			73,500
Total	85,700	13,808	9,000	108,500

v) Executing Agency: UNDP (possibly)

Counterpart Agency: FINEP

3.2 Infrastructure Technology: Transport, Energy and Communication

3.2.1 BRA/74/012 Research on the Interrelationships between Highway Construction Costs, Maintenance and Utilization

i) Objectives

The main objective of the project is to assist the Government in reducing to a minimum the total social cost of the transportation system. To attain this objective the project will study the interrelationships between the components that affect highway transport costs: road building costs, maintenance and user costs. The individual relationships are determined by a series of variables, which vary from region to region. The project will carry out research on several types of roads and vehicles in order to later adjust the various technical parameters utilized in the elaboration of highway feasibility studies to the Brazilian reality. Once these parameters are identified, they will be reduced to a mathematical model developed by M.I.T. (USA), which will be adapted to the Brazilian situation. On the basis of this model, it will be possible to minimize the sum of the three components, and thereby calculate the lowest social cost for each study.

ii) Function of the Project in the Programme

This project is related to the other research activities on highways being carried out by IPR. Moreover, the minimization of total social costs of highway transport should have a positive impact on fuel saving. The project, therefore, is indirectly linked to those projects in the petrochemical and energy sectors.

iii) Government Contribution: Cr$ 40,054,636 (1975/78)

iv) UNDP Contribution

a) The project was started in 1975 and the total contribution of UNDP through 1978 is estimated at US$ 2,410,000.

b) UNDP Contribution in the Second Country Programme:

(US Dolaars)

	1977	1978	Total
Subcontract	518,000	557,000	1,075,000
Total	518,000	557,000	1,075,000

v) Executing Agency: IBRD

Counterpart Agency: GEIPOT

3.2.2 BRA/76/007 Training of Personnel and Development of Research at the "Centro de Pesquisa de Energia Elétrica" CEPEL

i) Objectives

With the purpose of strengthening and unifying the infrastructure of basic and applied research for the electric energy sector at the federal level, the Government created, within the Ministry of Mines and Energy, the "Centro de Pesquisa de Energia Elétrica" (CEPEL). The objective of the project is to assist in the orientation to be given to research and training programmes for technical personnel at CEPEL, the upgrading of such personnel through in service training, and technical improvement in similar and/or academic institutions abroad. Among the priority projects to be carried out by CEPEL during the implementation of the UNDP assistance, the following may be cited: a) studies of technological problems associated with the transmission of energy over long distances; b) improvement of methods of optimization for planning and operation of electric systems; c) studies related to the improvement of efficiency in the use of various materials and components of electrical installations and other supporting activities to the electric materials industry.

ii) Function of the Project in the Programme

It is related to project BRA/76/010 Normalization and Industrial Quality Control in the Electric/Electronic Sector in that part concerning the support to be given to the Electric/Electronic industries. As regards manpower training, it is related to project BRA/76/003 Qualification and Manpower Training for Nuclear Energy.

iii) Government Contribution: Cr$ 151,155,000

iv) UNDP Contribution

The UNDP Contribution is estimated at US$ 372,000, and the project should start in 1978 with duration foreseen until 1981.

v) Executing Agency: UNDP (possibly)

Counterpart Agency: ELETROBRAS/CEPEL

3.2.3 BRA/74/009 Research and Development in Telecommunications

i) Objectives

Contribute to the development of the national electronics industry, to enable it to develop project and manufacture components and equipment for telecommunications best suited to Brazilian conditions and export potential. To attain these objectives, the project assists TELEBRAS in the promotion, integration and supervision of research and development in telecommunications, at the national level, including electronic switching, communications by laser, electro optics, propagation and radiometeorogogy, antennas and complementary components. Assistance is, moreover, being given to TELEBRAS in a revision of the overall planning of national and local telephone networks.

ii) Function of the Project in the Programme

With regard to aspects of manpower training in the telecommunications field, it is related to project BRA/74/010 - Human Resources Training for Telecommunications. It is also related to the subsector "Industrial Technology", particularly to project BRA/76/010 - Standardization and Industrial Quality in the Electronic Sector, in view of its implications in the area of production of components and electronic equipment. It is also related to the subsector "Scientific Development and Formation of Human Resources for Research" because of the heavy involvement of universities in the research projects.

iii) Government Contribution: Cr$ 331,300,000 (1975/78)

iv) UNDP Contribution

The project started in 1975 and the total UNDP contribution through 1978 totals US$ 1,111,600.

Contribution during [illegible] Second Country Programme:

	1977	1978	Total
Experts	260,500	375,000	635,500
Training	28,000	42,000	70,000
Equipment	6,000	10,000	16,000
Sundry	5,500	7,600	13,100
Total	300,000	434,600	734,600

v) Executing Agency: ITU

Counterpart Agency: TELEBRAS

3.3 Industrial Technology

3.3.1 Subprogramme Consolidation of the Infrastructure of Industrial Technology

3.3.1.1 BRA/71/560 Assistance to the National Institute of Weights and Measures

i) Objectives

The project aims at consolidating the "Instituto Nacional de Pesos e Medidas" (INPM) which constitutes the basis of the National System of Standardization and Industrial Quality. The project is assisting INPM in the following activities:

a) establishment of a four level"basic standards chain";
b) administration and improvement of legal metrology services;
c) building and equipping of central laboratories;
d) organization of a training system and establishment of a training school;
e) organization of a documentation centre.

ii) Function of the Project in the Programme

It is related to the group of projects in Standardization and Industrial Quality, inasmuch as it provides the instruments that permit the implementation of such projects. It has already established close contact with BRA/73/004 - Airworthiness Certification where a metrology laboratory is being introduced as part of the network of INPM.

iii) Government Contribution: Cr$ 92,369,000 (1972/78)

iv) UNDP Contribution

a) The project started in 1972 and the total UNDP contribution through 1978 is US$ 915,100.

b) UNDP contribution during the Second National Country Programme:

	1977	1978	Total
Experts	197,400	57,000	254,400
Training	26,100		26,100
Total	223,500	57,000	280,500

v) Executing Agency: UNIDO

Counterpart Agency: STI/INPM

3.3.1.2 BRA/73/004 Airworthiness Compliance Certification

i) Objectives

To strenghen the technological infrastructure of regulations, standards and requirements of quality certification and airworthiness of products, processes and services produced by the Brazilian aero space industry. The project will enable CTA to perform the following tasks:

a) approve aeronautical products developed and manufactured in the country, utilizing procedures and techniques according to international standards;
b) assist the civil aeronautical industry to attain the levels of quality and airworthiness above mentioned;
c) contribute to the formulation of technical flight safety standards for the national air transport industry. The project includes the improvement of the installations and supply of testing equipment and training of personnel.

ii) Function of the Project in the Programme

As regards the aeronautical sector, it is related to project BRA/74/004 - Aeronautical Training. It is directly related also to BRA/75/018 - National System of Standardization and Industrial Quality, which provides guidance to all projects included in the group of industrial standardization. In its training aspect, it is related to the projects in the subsector "Training of Technical and Professional Personnel".

iii) Government Contribution: Cr$ 151,176,000 (1974/78)

iv) UNDP Contribution

a) The project started in 1974 and the total contribution of UNDP should amount to US$ 1,826,700 through 1978.
b) UNDP contribution in the Second Country Programme:

	1977	1978	Total
Experts	375,000	369,000	744,000
Subcontracts		150,000	150,000
Training	200,800	200,800	401,600
Total	575,800	719,800	1,295,600

v) Executing Agency: ICAO

Counterpart Agency: CTA

3:3:1:3 BRA/75/003 Assistence in the Field of Standardization, Quality Control and Quality Certification of Iron and Steel

i) Objectives

To develop national standards in the field of iron and steel, to introduce well defined procedures for quality control in production units, and to institute an effective system of quality certification for the domestic and export market. The project should produce significant savings in the production and utilization of iron and steel and should help promote exports. It also foresees the training of counterpart personnel and the establishment of an information and documentation system.

ii) Function of the project in the Programme: The project constitutes, for the iron and steel industries, development in depth of BRA/75/018, National System of Standardization and Industrial Quality Control. It is also related to BRA/74/001 - Foundry Centre at Itauna, in its metallurgical aspects.

iii) Government Contribution: Cr$ 36,376,000 (1976/1980)

iv) UNDP Contribution:

a) The project is starting in 1976 and the total UNDP contribution through 1980 is estimated at US$ 1,663,525.

b) UNDP contribution in the Second Country Programme:

	1977	1978	1979	1980	Total
Experts	532,500	428,500	262,500	98,500	1,322,000
Subcontracts	---	130,000	---	---	130,000
Training	14,500	---	---	---	14,500
Sundry	1,200	1,200	1,200	2,700	6,300
Total	548,200	559,700	263,700	101,200	1,472,800

v) Executing Agency: UNIDO

Counterpart Agency: STI

3.3.1.4. BRA/75/018 - National System of Standardization and Industrial Quality Control

i) Objectives:

To establish a national standardization system, and the necessary infrastructure for the elaboration of national standards (goal: about 15,000 standards) and their implementation in accordance with the priorities for industrial development. In addition, to establish a network for inspection and quality certification to improve the marketing of Brazilian goods in the domestic and export markets, thus ensuring adequate protection for the consumer, by improving the quality control of manufactured goods.

ii) Function of the Project in the Programme: This project is linked to all those related to standardization and industrial quality. It complements, particularly, the activities of BRA/71/560 - Assistance to The National Institute of Weights and Measures since metrology is the starting point for a system of standards and industrial quality.

iii) Government Contribution: Cr$ 80,470,000 (1976/1980)

iv) UNDP Contribution:

a) The project is starting in 1976 and the total UNDP contribution through 1980 is estimated at US$ 968,400.

b) UNDP contribution in the Second Country Programme:

	1977	1978	1979	1980	TOTAL
Experts	210,000	203,000	203,000	74,000	690,000
Training	42,000	42,000	42,000	-	126,000
Sundry	4,600	4,600	4,600	9,600	23,400
TOTAL	256,600	249,600	249,600	83,600	839,400

v) Executing Agency: UNIDO

Counterpart Agency: STI

3.3.1.5. BRA/76/008 - Assistance in the Field of Standardization Quality Control and Quality Certification in the Agro-Industries Sector.

i) Objectives:

The Second National Development Plan assignes agro-industry a prominent role not only in meeting the demands of the domestic food market and in demonstrating Brazil's commitment to assist in supplying the world's food needs, but also as a policy of attenuating regional disparaties. The Government's support for the installation and consolidation of large agro-industrial complexes calls for the rationalization of the production process in the sector, through standardization and quality control. Likewise, these measures are also essential for a greater penetration of export markets. The project aims at assisting the Government in the elaboration of standards for the agro-industrial sector, and in the installation of a system for quality control and certification.

ii) Function of the Project in the Programme: it is related to BRA/75/018-National System of Standardization and Industrial Quality, this project being the origin of all others in the standardization group. In that part concerning activities in the field of food technology, projects BRA/71/555 - Tropical Fruits Processing Centre, BRA/73/017 - Meat and Milk Technology, and BRA/75/029 - Dairy Products, bear a complementary relationship to this project.

iii) Government Contribution: Cr$ 15,050,000

iv) UNDP Contribution: the project should be initiated in 1978, ending in 1981, and the UNDP contribution is estimated at US$ 415,600.

v) Executing Agency: UNIDO

Counterpart Agency: STI

3.3.1.6. BRA/76/009 - Assistance in the Field of Standardization Quality Control and Quality Certification in the Sector of Non-ferrous materials

i) Objectives:

The Government, through CONSIDER, has formulated a National Programme for Non-ferrous Metals principally aluminium, lead and zinc, that aims at making the country self-sufficient, and even to generate an excess for export. The above mentioned Programme foresees investments in the order of US$ 5 billions. The objective of this project is the establishment and introduction of technical and industrial standards indispensable for the development of the infrastructure required by the Programme. The project also envisages the introduction of procedures for quality control at the plants and the institutionalization of a system of quality certification for the domestic and export markets.

ii) Function of the Project in the Programme. This project is derived from BRA/75/018 - National System of Standardization and Industrial Quality which embodies all the others in the field of standardization. It is also related to BRA/74/001 - Foundry Centre at Itauna.

iii) Government Contribution: Cr$ 15,050,000

iv) UNDP Contribution: the project shall start in 1978 and end in 1981. The UNDP contribution is estimated at US$ 415,600.

v) Executing Agency: UNIDO

Counterpart Agency: STI

3.3.1.7. BRA/76/010 - Assistance in the Field of Standardization Quality Control and Quality Certification in the Electric and Electronic Sector

i) Objectives:

To develop national standards in the electric electronic sector, to implement sound procedures of quality control at the plants and to institute an effective system of quality certification for the domestic and export markets.

ii) Function of the Project in the Programme: this project is part of a group of projects for standardization, the principal one being BRA/75/018 - National System of Standardization and Industrial Quality. It is also related to BRA/74/009 - Research and Development for Telecommunications, aiming at strengthening the national components and electronic equipment industry.

iii) Government Contribution: Cr$ 24,000,000

iv) UNDP Contribution: the project is scheduled to start in 1978 and end in 1981. The total UNDP contribution is estimated at US$ 743,250.

v) **Executing Agency:** UNIDO

Counterpart Agency: STI

3.3.1.8. BRA/76/011 - Assistance in the Field of Standardization Quality Control and Quality Certification in the Mechanical Sector

i) Objectives:

To develop national standards in the mechanical sector, to implement sound procedures of quality control at the plants and, to institute an effective system of quality certification for the domestic and export markets.

ii) Function of the Project in the Programme:

It is part of the group of projects for standardization, the principal one being BRA/75/018 - National System of Standardization and Industrial Quality Control. It is particularly related to BRA/76/013 - Import Substitution of Capital Goods which includes, among its objectives, the development of the area of mechanical components of machine construction.

iii) Government Contribution: Cr$ 21,800,000

iv) UNDP Contribution: the project is scheduled to start in 1978 and end in 1981. The total UNDP contribution is estimated at US$ 642,300.

v) **Executing Agency:** UNIDO

Counterpart Agency: STI

3.3.1.9. BRA/76/012 - Prevention Techniques and Industrial Pollution Control

i) Objectives:

The rational utilization of natural resources and the improvement of the quality of life of the population presuposes that industrial development be compatible with the maintenance of minimum standards for ecological balance. In this respect, the Government has decided to create the infra-structure required for the formulation and adoption of evaluation criteria that take into consideration, when approving industrial projects, repercussions on the environment. To assist in the establishment of this infra-structure, the project will help the Government define acceptable limits of industrial pollution, and formulate techno-economic alternatives to industrial processes which pollute. The project also includes the training of personnel for the industrial pollution field. High level personnel are needed mainly in the following industrial sectors: mining of non-metalic elements, the metallurgical industries, the pulp and paper industries, the leather industry, and the chemical and petrochemical industries.

ii) Function of the project in the Programme: In view of its broad scope, the project is related to the majority of projects in the industrial sector.

It has also complementary aspects to projects in the area of preservation of the environment, within the sub-sector. "Technology Applied to Social Development", in particular to project BRA/71/547 - Pollution Control São Paulo and BRA/73/003 - Environmental Sanitation in Rio de Janeiro, the objectives of which are, nevertheless, essentiallly of a corrective nature.

iii) Governement Contribution: Cr$ 30,000,000

iv) UNDP Contribution: the project is scheduled to start in 1978 and end in 1981. The UNDP contribution is estimated at US$ 750,750.

v) Executing Agengy: UNIDO

Counterpart Agency: STI

3.3.1.10. BRA/71/559 - Modernization of the Brazilian Patent System

i) Objectives:

To assist in the complete modernization of the Brazilian patent system; the creation of a technical data bank consisting of patent and non-patent literature, including an efficient retrieval systems; the introduction of modern techniques of patent examination and research through the training of personnel in the mechanic, chemical and electric fields. The project objectives include in addition the acquisition, classification and organization of a patents archive and the establishment of a system for the dissemination of technical information to industry, related to the evaluation of patents and to proposals for licensing of know-how with emphasis on the identification of alternative technologies.

ii) Function of the Project in the Programme: given its considerably significance for industrial development, the project is related to all the others in this area and contributes, together with projects BRA/71/560 - Assistance to INPM and BRA/75/018, National Systems of Standardization and Industrial Quality Control, to the formation of an industrial technology infra-structure.

iii) Government contribution: Cr$ 96,790,000 (1973/1978)

iv) UNDP Contribution:

a) the project started in 1973 and the UNDP contribution through 1978 is estimated at US$ 3,955,000

b) UNDP contribution in the Second Country Programme:

	1977	1978	TOTAL
Subcontracts	835,100	469,100	1,804,200
TOTAL	835,100	469,100	1.804,200

v) **Executing Agency:** WIPO

Counterpart Agency: STI/INPI

3.3.2. Sub-Programme - Technological Development of Priority Sectors

3.3.2.1. BRA/71/555 - Tropical Fruit Processing Centre

i) **Objectives:**

Assist the Government in the development of the tropical fruits processing industry in Northeast Brazil, through the establishment at the Research and Development Centre (CEPED), in Salvador, of a coordinated and integrated research programme, and through advisory services in the areas of production, processing and marketing of tropical fruits such as pineapples, avocados, carambola, guava, jaca, mangaba, papaya, passion-fruit and mango. The Project covers also production and processing of vegetables grown in the region.

ii) **Function of the Project in the Programme:** it is directly related to others in the field of food technology. Moreover, this project has been cooperating with BRA/74/008 - Irrigation of the San Francisco River Valley, utilizing primary products of areas irrigated by CODEVASP. In its marketing aspect it is related to projects of Agricultural Marketing, with BRA/76/017 in particular - Centre for the Development of Human Resources for the Marketing of Agricultural Products. Finally, it is linked to BRA/76/008 - Normalization and Quality Control in the Sector of Agro-Industries.

iii) **Government Contribution:** Cr$ 20,000,000 (1972/1979)

iv) **UNDP Contribution:**

a) the project started in 1972 and should end in 1979. The total UNDP contribution may reach US$ 1,765,500.

b) UNDP contribution during the Second Country Programme:

	1977	1978	1979	TOTAL
Experts	201,000	147,000	56,000	404,000
Training	36,650	25,200	9,450	71,300
Equipment	25,000			25,000
Sundry		5,000		5,000
TOTAL	262,650	177,200	65,450	505,300

v) **Executing Agency:** FAO

Counterpart Agency: CEPED

3.3.2.2. BRA/73/017 - Meat and Milk Technology - CETEC

i) Objectives:

To assist the Technological Centre of Minas Gerais (CETEC) in the creation and strengthening of a food technology division to provide the industry with modern technology for processing and marketing of food products, and to conduct research programmes financed either by public or private enterprises. The project is concentrated on meat and milk technology.

ii) Function of the Project in the Programme: in that concerning food technology, it is related to the projects in the sub-programme "Technological Development of Priority Sectors". It is, moreover, related to the marketing of primary products projects, and particularly to project BRA/76/017 Centre for the Development of Human Resources for the Marketing of Agricultural Products. It is also connected with BRA/76/008, - Standardization and Quality Control for the Sector of Agro-Industries.

iii) Government Contribution: Cr$ 5,000,000 (1974/1978)

iv) UNDP Contribution

a) The project started in 1974 and should end in 1978. The total UNDP contribution should amount to US$ 438,000.

b) UNDP Contribution in the Second Country Programme:

	1977	1978	TOTAL
Experts	144,000	96,000	240,000
Total	144,000	96,000	240,000

v) Executing Agency: FAO

Counterpart Agency: CETEC

3.3.2.3. BRA/75/029 - Dairy Products Technology

i) Objectives:

The Integrated Food Technology Plan (PLANITA) objectives in the dairy products area include the following: development of sterilization techniques aimed at the production of "long-life" milk, cheese and fermented milk technology, improvement of the "doce de leite" and ice cream technology. Also included is research on the introduction of new dairy products and on the partial substitution of milk by similar products of lower cost. The Institute for Food Technology (ITAL) is one of the organs that participates in the implementation of PLANITA, carrying out research to improve the quality of dairy products distributed to the public, especially cheese. The project aims at assisting ITAL in the transfer to industry of new technologies, thus contributing to the development of the industrial sector and to the imporvement of standards of quality of consumer products.

ii) Function of the Project in the Programme: It is related to BRA/73/017 - Meat and Milk Technology, and to BRA/75/022 - Milk Cattle Breeding. In that part concerning quality improvement, it complements BRA/76/008 - Standardization and Quality in the Agro-Industrial Sector.

iii) Government Contribution: Cr$ 7,615,560 (1976/1978)

iv) UNDP Contribution:

a) The project started in 1976 and is expected to end in 1978. The total UNDP contribution is estimated at US$ 108,000.

b) UNDP Contribution in the Second Country Programme:

	1977	1978	Total
Experts	36,000	36,000	72,000
Total	36,000	36,000	72,000

v) Executing Agency: FAO

Counterpart Agency: ITAL

3.3.2.4. BRA/76/004 - Petrochemical Technology

i) Objectives:

The rapid expansion of the petrochemical sector in the country has led to the creation of a second petrochemical pole in the Northeast region. The Petrochemical Pole of Bahia calls for the installation in the region of a large-scale manufacturing industry for petrochemical products. The considerable capital required by these enterprises, and the rapid technological evolution peculiar to the sector, justify the establishment of broad technological support in the region. The present project aims at stimulating the creation of national technology in the areas of basic, intermediate and final petrochemicals, and to assist in the solution of operational and management problems facing the industry. The project objectives include:

a) the establishment of a petrochemical technology centre with a trained staff, library, laboratories for analysis and quality control, pilot plants and utility services; b) the establishment of advisory services in matters connected with the operational problems of industry; and c) the establishment of a research and development programme in the areas of quality analysis and control, improvement of processes and utilization of by-products.

ii) Function of the Project in the Programme: It is indirectly linked to the Government's energy programme and, with regard to possible inputs for production of oil substitutes, it is related to BRA/76/020 Bio-Conversion of Crops for the Production of Alcohol. In its aspects of standards and metrology, it is linked to BRA/71/560 - Assistance to INPM, and to BRA/75/018 - National System of Standardization and Industrial Quality Control. In that part concerning research, it has aspects in common with BRA/75/001 - Post-Graduation in Chemistry. Moreover, the petrochemical industry is one of the sectors included under BRA/76/012 - Industrial Pollution Control.

iii) Government Contribution: Cr$90,976,000

iv) UNDP Contribution: The project is scheduled to start in 1978 and end in 1981. The total UNDP contribution is estimated at US$ 750,450.

v) Executing Agency: UNIDO (possibly)

Counterpart Agency: CEPED

3.3.2.5. BRA/76/013 - Programme for Import Substitution of Capital Goods

i) Objectives:

The Government policy concerning the capital goods sector aims at stimulating, during the forthcoming years, the process of import substitution which is already underway. The capital goods sector had consolidated its leadership role in the development of the industrial sector and increasing exports. It is, nevertheless important that national industry increasingly participates in this growth process. Among the factors that have limited this participation, especially with regard to non-mass-produced capital goods, the following should be mentioned: 1) the absence in the country of large industrial consulting enterprises. Engineering is largely executed by foreign firms that generally present specifications for equipment only to be found in their respective countries; 2) the way in which technological research is being carried out both in national research institutions and in the few private enterprises that undertake it is not relevant to the production system. The Government is,therefore, promoting the technological development of this sector, through the support of research and design activities of product engineering and manufacture, as well as the import and absorption of foreign know-how.

Within this context, the present project aims at strengthening national technological production in the area of capital goods, through the implementation of a work plan to promote the gradual interaction between technology institutes, capital goods manufacturers, and engineering firms. The technology institutes which will participate in the project (IPT, CTA, UNICAMP and others) should receive assistance in the areas of production, construction and testing of machinery and components so as to be able to perform the following tasks: carry out sectoral studies to assist governmental bodies and private enterprises; identification of production sectors and subsectors where a new development or fundamental re-equipment is needed; development of basic designs and methods of calculation of equipment; and co-ordination with engineering firms, manufacturers of machinery, equipment and components to attain the desired results.

Fifteen priority sub-sectors to be covered by the project have been indentified: a) industrial furnaces for heating and for heat treatment, including as well refractory materials; b) foundry equipment; c) forge; d) packaging machines; e) railway transport; f) ship transport; g) machines for cargo movement; h) machine tools for metal working; i) wood working machines; j) machine-tools for metal shaping; k) hand tools, electric and pneumatic tools; l) process equipment, boilers, steam generators, heaters; m) farm machinery; n) machines for the textile industry; and o) equipment for the generation of electric power.

ii) Function of the Project in the Programme: This project is designed as a fundamental instrument within the Industrial Technology sector and is closely related to project BRA/76/011 - Standardization, Quality Control and Certification in the Mechanical Sector. In that part concerning training and research it is related to BRA/74/003 - Post-Graduation in Engineering. It is, moreover, related in one of its sub-sectors, to project BRA/74/001 - Foundry Centre at Itauna.

iii) Government Contribution: Cr$111,222,653

iv) UNDP Contribution: The project is scheduled to start in 1978 and is scheduled to end in 1982. The UNDP contribution is estimated at US$ 1,700,550.

v) Executing Agency: UNIDO (possibly)

Counterpart Agency: STI

3.4. Agricultural and Livestock Technology

3.4.1. BRA/69/535 - Increase and Development of Wheat Production

i) Objectives:

To asist the Government to increase and develop wheat production through a co-ordinated research programme in the most important wheat growing areas in the States of Rio Grande do Sul, Santa Catarina, and Paraná. The objective of the second phase of the project is to continue the integrated wheat research programme (cultivation, agronomy, pathology, and soil science) already established in the first phase. Moreover, the project aims at carrying out research directly related to the development of farm croping system (rotation of crops wheat/soy-bean or others) to increase total productivity and minimize soil erosion. The project should assist the Government so that the country may gradually become self-sufficient in wheat, and should contribute to the increase of exports in the primary sector.

ii) Function of the Project in the Programme: It is related to BRA/71/553 - Agricultural Planning and Training, within the scope of which the plan of self-sufficiency in wheat production has been elaborated. It also complements BRA/71/556 - Application of Nuclear Techniques to Agriculture, of the sub-sector "Development of New Technologies", with which scientific contacts have been established and joint experiments carried out.

iii) **Government Contribution**: Cr$90,620,000 (1969/1972)

iv) **UNDP Contribution**:

a) the project started in 1969 and is scheduled to end in 1979. The total UNDP contribution should reach US$2,385,650;

b) UNDP contribution in the second country programme.

	1977	1978	1979	TOTAL
Experts	246,000	246,000	246,000	738,000
Training	35,750	35,750	35,750	107,250
Total	281,750	281,750	281,750	845,250

v) **Executing Agency**: FAO

Counterpart Agency: EMBRAPA

3.4.2. BRA/67/524 - Expansion of the Work on Pesticides at the Biological Institute of São Paulo

i) **Objectives**:

To develop activities, research and technology on the integrated control of agricultural plagues and diseases, aiming at increasing agricultural productivity; to collaborate with the Ministry of Agriculture in a programme of field research for the control of plagues and diseases affecting the main Brazilian crops; and to develop the pilot plan in Campinas to its maximum capacity for the preparation of pesticides. The project foresees the following activities:

a) research on utilization of South American raw materials for the production of pesticides and similar products;

b) research on pesticide residues as well as development and evaluation of analytical procedures for the chemical determination of pesticides and their residues;

c) evaluation of the effectivenes and toxicity of new pesticides;

d) collaboration in plant protection activities in field research to evaluate new products.

ii) **Function of the Project in the Programme**: The project is related to all other projects that aim at the increase of agricultural productivity and, particularly, to BRA/71/556 - Application of Nuclear Techniques to Agriculture. In that part concerning toxicity it has aspects in common with projects for preservation of the environment.

iii) **Government contribution**: Cr$19,000,000 (1962/1978)

iv) UNDP Contribution

a) The project started in 1968 and is scheduled to end in 1978. The total UNDP contribution is estimated at US$1,482,800.

b) UNDP contribution in the Second Country Programme:

	1977	1978	TOTAL
Experts	117,000	117,000	234,000
Equipment	100,000	15,000	115,000
Total	217,000	132,000	349,000

v) Executing Agency: FAO

Counterpart Agency: Instituto Biologico of São Paulo

3.4.3. BRA/71/552 - Development of Livestock Production in Northeast

i) Objectives:

To assist EMBRAPA in the implementation of its "PROPASTO" Programme which aims at the development of pasture in the region, involving investments in the order of Cr$20 million. The project will supply information regarding production and utilization of pastures that may be immediately applied on an economic basis, to farms in areas adjacent to where field trials are conducted. It aims, moreover, at producing reliable data on which to base the future research activities of the National Research Centre for the Semi-arid Tropics. The project also foresees the dissemination of the technology developed.

ii) Function of the Project in the Programme: The project belongs to the group of activities which aim to increase agricultural productivity and improve cattle-breeding practices. Regarding its animal nutrition aspects, it will be implemented concomitantly with projects BRA/75/022 - Milk Cattle and BRA/75/023 - Beef Cattle.

iii) Government Contribution: Cr$28,000,000 (1972/1978)

iv) UNDP Contribution:

a) The project started in 1972 and is scheduled to end in 1978. The total UNDP contribution is estimated at US$1,262,500.

b) UNDP contribution in the Second Country Programme:

	1977	1978	TOTAL
Experts	132,000	72,000	204,000
Total	132,000	72,000	204,000

v) Executing Agency: FAO

Counterpart Agency: EMBRAPA

3.4.4. BRA/75/022 - Milk Cattle Research

i) Objectives:

EMBRAPA has created the National Research Centre on Milk Cattle, located near Juiz de Fora, State of Minas Gerais. The objective of this project is to assist the above mentioned Centre to develop research activities to improve the existing production systems and to formulate new ones. A second objective is to advise on the Centre's basic research systems as well as the Centre's satellite activities. Another objective is the training of research personnel.

ii) Function of the Project in the Programme: It is related to BRA/71/552 - Development of Livestock Production in the Northeast and BRA/75/023 - Beef Cattle, in its substantive aspects. It is also linked to BRA/73/017 - Meat and Milk Technology and BRA/75/029 - Dairy Products Technology in those aspects concerning the supply of raw materials for the relevant technological processes.

iii) Government Contribution: Cr$60,000,000 (1975/1978)

iv) UNDP Contribution:

a) The project started in 1976 and should end in 1978. The total UNDP contribution is estimated at US$429,750.

b) UNDP contribution in the Second Country Programme:

	US$ 1977	1978	TOTAL
Experts	228,000	132,000	360,000
Training	15,750	-	15,750
TOTAL	243,750	132,000	375,750

v) Executing Agency: FAO

Counterpart Agency: EMBRAPA

3.4.5. BRA/75/023 - Beef Cattle Research

i) Objectives:

The National Centre on Beef Cattle Research, in Campo Grande, Mato Grosso, was established by EMBRAPA to carry out studies to increase the economic efficiency of cattle production, while maintaining at the same time the biological efficiency of the eco-systems. The project foresees also advisory services for the basic research systems and their extension to satellite activities of the Centre, as well as training of personnel for research.

ii) Function of the Project in the Programme: It is related to BRA/71/552 - Livestock Production in the Northeast and BRA/75/022 - Milk Cattle. It also has aspects in common with BRA/73/017 - Meat and Milk Technology and BRA/71/556 - Application of Nuclear Techniques to Agriculture, in that concerning activities in animal sciences.

iii) Government Contribution: Cr$ 67,000,000 (1976/1978)

iv) UNDP Contribution:

a) The Project was started in 1976 and is scheduled to end in 1978. The total UNDP contribution is estimated at US$ 414,900.

b) UNDP contribution in the Second Country Programme:

	US$ 1977	1978	TOTAL
Experts	216,000	144,000	360,000
Training	18,900	-	18,900
TOTAL	234,900	144,000	378,900

v) Executing Agency: FAO

Counterpart Agency: EMBRAPA

3.4.6. BRA/74/008 - Irrigation in the São Francisco Valley

i) Objectives:

This project is part of the Government's programme of utilisation of water resources and irrigation which aims at the improvement of the technological standard of farming and cattle raising, the rationalisation of agricultural production processes and the increase of the food supply. Concentrated on technological aspects, the project aims particularly at: developing the know-how necessary for the supervision and construction of irrigation schemes, including the preparation of specifications, supervision of construction, and testing; developing a training structure to prepare personnel to operate and maintain the irrigation schemes when put into operation; training technicians and farmers for the proper utilisation and efficient administration of water resources; strengthening CODEVASF's administrative capacity.

ii) Function of the Project in the Programme: In its engineering and hydrological aspects it is related to project BRA/74/003 - Post-Graduation in Engineering, and to BRA/75/007 - Assistance to IPH. Moreover, this project has already established contact with two other ongoing projects in complementary areas in the Northeast region, BRA/71/552 - Livestock Production in the Northeast (pastures) and BRA/71/555 - Tropical Fruits Processing

Centre (fruits and vegetables). Finally, since the project covers the whole San Francisco River Valley, it is also related to the projects in the sub-sector "Technology Applied to Regional Development", mainly to BRA/74/007. Integrated Development of the Yaguaron River Basin, which foresees the introduction of a vast irrigation system.

iii) Government Contribution: Cr$12,226,800 (1975/1978)

iv) UNDP Contribution:

a) The project was started in 1975 and is scheduled to end in 1978. The total UNDP contribution is estimated at US$834,400.

b) UNDP Contribution in the Second Country Programme:

	US$ 1977	1978	TOTAL
Experts	225,000	149,000	374,000
Training	14,400	-	14,400
Total	239,400	149,000	388,400

v) Executing Agency: FAO

Counterpart Agency: CODEVASF

3.4.7. BRA/71/545 - Forestry Research and Development

i) Objectives:

To assist IBDF in its efforts to institutionalize its infrastructure for forestry research. International know-how will be needed in highly specialized areas for relatively short periods of time. The project should: a) improve t the biological, technological and economic bases for forestry development in Brazil and strengthen its co-ordination at the national level; b) intensify the utilization of the vast forestry resources, assisting in the solution of relevant technological, economic and other problems; c) to increase the introduction and management of rapidly growing species by the expansion of cultivation and genetical improvement. As in the first phase, the project will maintain regional sub-stations for the "cerrado", the Northeast, the Amazon, and the Southeast regions.

ii) Function of the Project in the Programme: It is related to the other projects in the area of Agricultural Research, as well as to BRA/71/555 - Tropical Fruit Processing Centre in its primary production aspects (fruit trees). It also has aspects complementary to BRA/71/556 - Application of Nuclear Techniques to Agriculture. A relationship has been established with BRA/71/553 - Agricultural Planning and Training with regard to the planning aspects of the forestry sector.

iii) Government Contribution: Cr$250,000,000 (1971/1978)

iv) UNDP Contribution

a) The project started in 1971 and is scheduled to end in 1978. The total UNDP contribution is estimated at US$3,634,900;

b) UNDP contribution in the Second Country Programme.

	US$ 1977	1978	TOTAL
Experts	522,000	387,000	909,000
Training	43,000	43,000	86,000
Total	565,000	430,000	995,000

v) Executing Agency: FAO

Counterpart Agency: IBDF

3.5. Technology Applied to Social Development

3.5.1. Health

3.5.1.1. BRA/71/563 - Drug Quality Control

i) Objectives:

The rapid expansion of the production of drugs in Brazil requires an equally rapid growth of capacity to control the quality of these products. The present project aims at assisting the Ministry of Health in strengthening the national system for drug quality and in developing an institution for training and research in this area. Specifically, it will strengthen the structure of the Central Laboratory for Drug Control, Medicine and Food of the Foundation Oswaldo Cruz, which will be linked to the rest of the country through a network of laboratories. The project will also assist the Government of São Paulo in the establishment of a Drug Quality Institute where approximately 50 drug analyst will be trained every year. The São Paulo Centre will also train inspectors for the Government and industry, as well as legal drug administrators, in addition to carrying out research on analytical methods. The project will also extend advisory services in the field of technical norms required in physical, chemical, and biological analysis of special interest for the Brazilian drug industry. Finally, the project should contribute to the dissemination of information on drugs.

ii) Function of the Project in the Programme: This project is closely linked to BRA/75/018 - National System of Standardization and Industrial Quality Control in the sub-sector "Industrial Technology", representing one of the specialized areas of that system. In its training activities and improvement of personnel aspects, it is related to projects in the sub-programme "Training of Techno-Professional Personnel" in the "Education" sector.

iii) Government Contribution: Cr$ 52,855,000 (1974/1978)

iv) UNDP Contribution:

a) Preparatory assistance started in 1974 and the project will terminate at 1978. The total UNDP contribution is estimated at US$ 1,280,942.

b) UNDP contribution as: (US$)

	1977	1978	TOTAL
Experts	222,610	334,490	557,100
Training	-	14,400	14,400
Equipment	120,000	25,000	145,000
Sundry	8,000	9,000	17,000
Total	350,610	382,890	733,500

v) Executing Agency: WHO/PAHO

Counterpart Agency: Federal Ministry of Health; Oswaldo Cruz Foundation.

3.5.1.2. BRA/75/010 - Assistance to the National Centre of Labour Safety, Hygiene and Medicine Foundation (FUNDACENTRO)

i) Objectives:

This project is part of the Government programme on occupational health which aims at contributing to: the improvement of working conditions, prevention and control of work accidents and the establishment of minimum occupational health and safety standards. Project activities will strengthen FUNDACENTRO's infra-structure through the training of personnel and modernization of its laboratories. In addition, the project will provide technical assistance to public and private enterprises and industries, to introduce new preventive measures in the field of labour safety, hygiene and medicine. It will also assist FUNDACENTRO in the area of research applied to labour safety, including the design of prototypes of equipment machines, and other safety devices. Finally, it will contribute in the elaboration and dissemination of technical documentation in this area.

ii) Function of the Project in the Programme: it is related to BRA/76/014, National System of Manpower Formation.

iii) Government Contribution: Cr$ 29,000,000

iv) UNDP Contribution: (in US$)

	1977	1978	1979	TOTAL
Experts	102,000	108,000	42,000	252,000
Training	69,300	22,050	3,150	94,500
Equipment	40,000	30,000	-	70,000
Total	211,300	160,050	45,150	416,500

v) Executing Agency: ILO

Counterpart Agency: FUNDACENTRO

3.5.1.3. BRA/76/021 - Tropical Medicine

i) Objectives:

The project is part of the Humid Tropics Programme (Decree nº 70.999, dated 17 August 1972) and its main objective is the development of medical research to secure knowledge that will enable the control of diseases unique to the tropics, such as black fever, yellow fever and malaria. The project aims specifically at the improvement of health conditions of the human population of the Amazon region.

ii) Function of the Project in the Programme: Falling within the Humid Tropics Programme, this project is related to the sub-sector "Technology Applied to Regional Development".

iii) Government Contribution: Cr$1,920,000

iv) UNDP Contribution: (in Us$)

	1977	1978	TOTAL
Experts	21,000	15,000	36,000
Training	10,000	5,000	15,000
Equipment	6,000	3,000	9,000
Total	37,000	23,000	60,000

v) Executing Agency: WHO/PAHO

Counterpart Agency: CNPq/INPA

3.5.2. Environment Preservation

3.5.2.1. BRA/71/547 - Development of Environmental Pollution Control Programmes for the State of São Paulo

i) Objectives:

The main objective of this project is to assist in the development of a programme for environment pollution control for the State of São Paulo. During its first phase, the project started a study of the quality of the water of the entire Paraiba do Sul River Basin where the great majority of the country's industrial parks are located. The project should specifically act in the following areas: (a) air pollution; introduce a system for the evaluation of automobile emissions and control of noise pollutions in the state of São Paulo; evaluate and continue the air pollution control programme, training professional staff for this area; plan and implement an automatic network of continuous monitoring of atmospheric pollutents; (b) area of water and solid waste pollution supply the technical support for the control of projects for waste treatment plants, verifying their technical adequacy; provide guidance in solid waste pollution covering the following topics: services planning, costs, equipment specification, etc. (c) research: biological treatment of waste water in continuous and discontinuous system to reduce the organic load, utilizing aerobical and/or anaerobical processes; production of concentrates of proteins or continuous and discontinuous system followed by biological treatment for the reduction of the organic load, which shall be attained and make possible the refuse of sub-products; (d) training: attain and maintain a sufficient availability of didatic resources, human resources, and financial resources to cover 100 per cent of the training activities; carry out two courses (40 hours each) on control of air pollution caused by automotive vehicles; carry out four courses (40 hours each) on the evaluation and control of noises and carry out courses on water and soils pollution control.

ii) Function of the project in the Programme:

The project has cooperated closely with BRA/73/003 - Environment Sanitation of the State of Rio de Janeiro, since the start of operation of the latter. It is also related to BRA/76/012 - Industrial Pollution Control, and BRA/76/005 - Centre for Urban Studies and Research.

iii) Government Contribution: Cr$ 180,000,000 (1971/1978)

iv) UNDP contribution:

a) The project started in 1971 and should terminate in 1978. The total UNDP contribution will amount to US$ 1,471,700.

b) UNDP contribution in the Second Country Programme.

	US$ 1977	1978	TOTAL
Experts	120,000	90,000	210,000
Training	80,000	40,000	120,000
Equipment	50,000	20,000	70,000
Total	250,000	150,00	400,00

v) Executing Agency: WHO/PAHO

Counterpart Agency: CETESB

3.5.2.2. BRA/73/003 - Environment Sanitation of the State of Rio de Janeiro

i) Objectives:

The objective of the project is to intensify activities designed to solve the serious problems resulting from inadequate water, air and soil quality in the State of Rio de Janeiro. Thus, the project will contribute to protect the health of the population, avoid difficulties generated by the deterioration of water in the region and decrease, social, economic and health costs of pollution. Specifically, the project shall assist FEEMA in the following areas: (a) pollution control programmes for Guanabara Bay; (b) sanitation of the Rodrigo de Freitas Lagoon; (c) integrated study of the waters of the Paraiba River; (d) improvement of knowledge of the air quality in the city of Rio de Janeiro; (e) studies on the emissions of incinerators and incineration of solid wastes; (f) study on the alternatives for the final disposal of solid waste.

ii) Function of the Project in the Programme: it cooperates with BRA/71/547 - Development of Research and Environment Control Programmes for the State of São Paulo, and will also be linked with BRA/76/012 - Industrial Pollution Control and BRA/76/005 - Centre for Urban Studies and Research.

iii) Government contribution: Cr$ 18,000,000 (1974/1978)

iv) UNDP contribution:

a) The project started in 1974 and is due to terminate in 1978. The total UNDP contribution should amount to US$ 1,358,200.

b) UNDP contribution in the Second Country Programme:

	US$		
	1977	1978	TOTAL
Experts	210,000	180,000	390,000
Training	40,000	20,000	60,000
Total	250,000	200,000	450,000

v) Executing Agency: WHO/PAHO

Counterpart Agency: FEEMA.

3.5.2.3. BRA/75/033 - Environmental Studies of Lake Paranoá

i) Objectives:

The Paranoá and Descoberto Basins, which form the lake of the same name, have an important function in the areas of drinking water supplies, recreation and micro-climate of the Federal District, and particularly of the city of Brasilia. The gradual increase of pollution of the river basins has made necessary the elaboration of a master plan for the recuperation and, subsequent maintenance of water quality within standards compatible with its utilization. The present project should contribute to deepen the ecological knowledge of the lakes in that part concerning limnological data, types and utilization of soils as well as the interrelation between the use of the soil and the water quality of the reservoirs. The project should also train personnel in the field of ecological research, as a support activity for programming, planning, normalization, control and evaluation of the use of the soil and water resources aiming at the preservation of ecological balance.

ii) Function of the Project in the Programme: it is related to BRA/73/003 - Environmental Sanitation of the State of Rio de Janeiro, particularly in that part concerning the works carried out in the Rodrigo de Freitas Lagoon.

iii) Government Contribution: Cr$ 9,400,000 (1976/1978)

iv) UNDP Contribution:

a) the project should start in 1976 and is scheduled to end in 1978. The total UNDP contribution is estimated at US$ 149,150.

b) UNDP contribution in the Second Country Programme (in US$)

	1977	1978	Total
Experts	36,000	40,500	76,500
Training	6,300		6,300
Total	42,300	40,500	82,800

v) Executing Agency: WHO/PAHO

Counterpart Agency: SEMA/CAESE

3.5.3 Housing and Urban Development

3.5.3.1 BRA/76/005 - Creation of Regional Centres for Urban Studies and Research

i) Objectives:

The project will assist the Ministry of Interior in the establishment of regional centres for urban studies and research which shall jointly develop teaching activities and research. These centres will be geared mainly to basic research. Applied research is the responsibility of other institutions presently active in the field of urban development. The main task of these Centres will be: a) to increase the knowledge of the Brazilian urban network in its different aspects; b) to rationalize, through integrated coordination, the activities developed in the various teaching and research institutions to increase production and avoid duplication of efforts; c) to aim at creating a technology adapted to the needs of the sector.

ii) Function of the Project in the Programme: It is related to projects BRA/71/547 - Development of Environment Pollution Control Programmes for the State of São Paulo and BRA/73/003 - Environmental Sanitation of the State of Rio de Janeiro, in that part concerning the preservation of the environment of the two main urban centres of the country. It is also linked to the subsector "Scientific Development" (Basic Research).

iii) Government Contribution: Cr$ 90,700,000

iv) UNDP Contribution:

The project is scheduled to start in 1978 and to end in 1980. The UNDP contribution is estimated at US$ 673,650.

v) Executing Agency: United Nations (OTC) possibly

Counterpart Agency: REMI/MINTER/CNPU.

3.5.3.2 BRA/75/040 - Housing Technology

i) Objectives:

To develop research into the utilization of new building materials, technological alternatives for low cost housing and identification of model housing.

ii) Function of the Project in the Programme: This project is related to the Government's programme in the industrial technology subsector in that part concerning the building materials industry.

iii) Government Contribution: Cr$ 3,000,000

iv) UNDP Contribution: (in US$)

	1977	1978	Total
Experts	60,000	36,000	96,000
Training	8,400	10,200	18,600
Equipment	11,600		11,600
Total	80,000	46,200	126,200

v) Executing Agency: United Nations (OTC), possibly.

Counterpart Agency: CNPQ/IPT/CEPED

3.5.4 Educational Technology

3.5.4.1. BRA/75/035 Professional Training Technology CENAFOR

1) Objectives

To assist CENAFOR to develop research in professional training; to form a team capable of absorbing the results of pedogogical research carried out in Brazil and abroad in professional training; and to develop, apply, evaluate and disseminate new methods of professional training.

To develop the use of educational technology, to train a team capable of mobilizing educational technology resources, placing them at the service of professional training, particularly in the area of audio visual pedagogy, tele-education, manufacture and utilization of teaching material.

ii) Function of the Project in the Programme: This project is related to the Education Sector and is linked, particularly, to BRA/76/014 National System of Manpower Training. It is also related to projects included in the subsector "Formation of Techno Professional Personnel", in that part concerning training methodology.

iii) Government Contribution: Cr.$ 105,572,610 (1976/1977)

iv) UNDP Contribution

a) The project started in 1976 and is scheduled to end in 1977. Total UNDP contribution is estimated at US$ 435,000.

b) UNDP contribution in the Second Country Programme (US$)

	1977	Total
Experts	186,000	186,000
Training	10,000	10,000
Sundry	4,000	4,000
Total	200,000	200,000

v) Executing Agency: ILO

Counterpart Agency: CENAFOR/MEC

3.6 Technology applied to Regional Development

3.6.1 BRA/74/007 Integrated Development of the Yaguaron River Basin

i) Objectives

The present project aims at contributing to the agricultural and live stock development of the region through the implementation of an irrigation system of about 41,000 hectares in Brazil and 54,000 hectares in Uruguay. The project will be implemented in three phases: a) complementary studies and projects for work execution; b) construction of the projected works; and c) operation of the system.

In a first phase, complementary studies will be carried out as well as the executive projects and specifications for the purchase and installation of equipment for the following civil works: 1) Paso Talavera Dam to supply the irrigation system; 2) irrigation and drainage system, including the division of priority areas of about 10,000 hectares in each country; 3) protection works against floods in the city of Rio Branco in Uruguay.

ii) Function of the Project in the Programme: It is linked to BRA/74/008 - Irrigation of the San Francisco Valley in that part concerning the irrigation technology aspects, and to BRA/75/007 - Assistance to IPH in that part concerning hydraulic engineering applied to agriculture. It is also related to projects in the sub-sector "Environment Preservation" in view of its ecological aspects.

iii) Government Contribution: Cr.$ 5,930,400 (1976/1978)

iv) UNDP Contribution:

a) The total UNDP contribution is estimated at US$ 504,000. The project started in 1976 and is scheduled to end in 1978.

b) UNDP Contribution in the Second Country Programme (US $):

	1977	1978	Total
Experts	21,000	(*)	21,000
Sub-contracts	100,000		100,000
Training	9,000		9,000
Total	130,000		130,000

(*) The UNDP contribution in 1978 is to be charged to the IPF of Uruguay.

v) Executing Agency: UNDP

Counterpart Agency: CLM/SUDESUL

3.6.2. BRA/74/028 - Integrated Utilization of the Paraguay River Basin

i) Objectives:

This project is integrated into the goals of PRODEPAN (Pantanal Development Programme).

Its objectives are: to plan the integrated utilization of water and soil resources of the Paraguay River Basin within Brazil, emphasizing the establishment in the region of a transport infrastructure; the industrialization of raw materials; the expansion of the supply of energy and the regularization of the water courses; and livestock development. Environmental protection aspects will also be considered as well as the conservation of natural resources. The project will have the following phases: a) systematization of data evaluation on projects and programmes being carried out in the region; b) complementation of information available on the natural resources of the region; c) elaboration of alternative schemes for the integrated development of the region, incorporating as many existing plans, projects and programmes as possible at several levels of economic viability; d) comparison, through multidisciplinary studies, of the efficiency of the various alternative schemes elaborated, with a view, to selecting the best components of each scheme for the elaboration of a Master Development Plan for the region; e) elaboration of a Master Plan for the development of the region including recommendations for short-, medium- and long-term action for a work plan and for cost estimates.

ii) Function of the Project in the Programme: In view of its approach to integrated regional development, the project is linked to the others included in the sub-sectors "Infrastructure Technology", "Industrial Technology", and "Environment Preservation", taking into account that some of the activities of these sub-sectors are included in this project. It is also related to BRA/74/008 - Irrigation in the San Francisco Valley, in that part concerning agricultural irrigation, and to BRA/75/023 - Beef Cattle, since livestock production is one of the main economic activities of the region and because the National Centre of Research on Beef Cattle is located in the same region as the project. It is also related to BRA/74/007 - Integrated Development of the Yaguaron River Basin, which is also an integrated regional development project.

iii) Government Contribution: Cr$61,400,000 (1976/1979)

iv) UNDP Contribution:

a) The project is scheduled to start in 1976 and to end in 1979. The total UNDP * contribution is estimated at US$ 943,000.

b) UNDP contribution in the Second Country Programme:

	1977	1978	1979	Total
Sub-contracts	190,000	270,000	240,000	700,000
Total	190,000	270,000	240,000	700,000

*) The Organization of American States will contribute with resources of approximately US$ 250,000.

v) Executing Agency: UNDP/OAS

Counterpart Agency: SUDECO

3.7. Scientific Development and Formation of Human Resources for Research

3.7.1. Sub-Programme Strengthening of the National Post-Graduation System

3.7.1.1. BRA/69/533 - Agricultural Education and Research at the Federal University of Santa Maria (UFSM)

i) Objectives:

The objective of the project is to assist the Federal University of Santa María to strengthen its Rural Sciences Centre to allow it to take a leading role in the agricultural education and research of Southern Brazil.

Specifically, the objectives of the project are to: a) establish long-term goals for agricultural development and to plan for implementation and evaluation to attain these objectives; b) improve the educational programmes of the Rural Sciences Centre; c) organize and implement relevant research that may serve as a basis simultaneously for the improvement of academic courses and further the development of agriculture in the region; d) to disseminate agricultural information to agricultural high schools and rural communities in the region in cooperation with other interested governmental agencies; e) assist in the establishment of a satisfactory library for teaching and agricultural research.

ii) Function of the Project in the Programme: This project should contribute to the application of new agricultural techniques. In this sense, it is related to projects in the sub-sector "Agricultural Technology". By its approach to training, it is linked to projects in the sub-sector "Formation of Techno-Professional Staff". It is linked to BRA/72/020 - National System of Agricultural Information and Documentation in that part concerning its agricultural extension aspects and the dissemination of information. Moreover, this project has in some instances been assisting agricultural industries such as the wine industry and thus complements BRA/76/008 - Standardization Quality Control and Certification in the Agro-industrial Sector as well as projects in the food technology area.

iii) Government Contribution: Cr.$19,000,000 (1970/1978)

iv) UNDP Contribution in the Second Country Programme:

a) The project started in 1970 and should terminate in 1978, total UNDP contribution is estimated at US$ 2,960,500.

b) UNDP contribution in the Second Country Programme:

	US$ 1977	1978	Total
Experts	8,000	5,000	13,000
Sub-contracts	150,000	100,000	250,000
Training	60,000	40,000	100,000
	218,000	145,000	363,000

v) Executing Agency: FAO

Counterpart Agency: Federal University of Santa Maria (FUSM)

3.7.1.2. BRA/75/001 - Development and Consolidation of the Post-graduation Programme in Chemistry

i) Objectives:

Qualified personnel are in great demand in the field of chemistry, not only for teaching and research but for industry as well. The Second National Development Plan estimates that all schools that maintain post-graduation courses in chemistry should, by 1979, be producing 50 doctors and 200 masters per year. To fill the deficit, the Second National Development Plan recommends that qualified teachers be brought from abroad and Brazilians sent abroad for training. This will help maintain the post-graduation centres thus making easier the implementation of new lines of research. This project aims at assisting the State University of Campinas (UNICAMP) to train professionals in chemistry at Master of Sciences and PhD levels to (a) further already existing teaching and research activities and to create new areas of research, (b) to increase the absorptive capacity of post-graduate programmes for new students by at least 100%; (c) to improve the equipment of the Chemistry Institute to further its research activities and to assist other sectors both public and private.

ii) Function of the Project in the Programme: In that part concerning applied chemistry aspects, it is related to projects in the sub-sector "Industrial Technology", especially to BRA/76/004 - Petrochemical Technology, and with projects in the food technology area. It is also linked to the sub-sector "Environment Preservation", in view of the important role of chemistry in the projects in this sub-sector. Project BRA/76/017 - Oceanography covers the area of marine chemistry, and is thus also linked to this project.

iii) Government Contribution: Cr$55,000,000

iv) UNDP Contribution (in US$):

	1977	1978	1979	Total
Experts	165,000	180,000	150,000	495,000
Training	20,000	40,000	50,000	110,000
Equipment	85,000	70,000	40,000	195,000
Total	270,000	290,000	240,000	800,000

v) Executing Agency: UNESCO

Counterpart Agency: UNICAMP

3.7.1.3. BRA/75/007 - Assistance to the Hydraulic Research Institute (PH) of the Federal University of Rio Grande do Sul

i) Objectives:

The IPH has received UNDP/UNESCO assistance during the First Country Programme for the strengthening of its structure through BRA/67/527, the objectives of which were: a) training of specialists in hydrology at the masters and mid-level; b) execution of applied research; c) assistance to Government institutions for the development of the country's water resources. The present project's objectives are: a) in the area of teaching and research: to establish programmes at PhD level in water resources; to continue supporting the Master of Sciences courses in applied hydrology; to cooperate in the training of mid-level technicians; to carry out research projects; b) in the field of consultant services: to develop and strengthen the consultancy structure in IPH to support, in the main, the Regional Development Superintendencies and to disseminate up-to-date technological know-how to national institutions. It is to be noted that the courses at the IPH are open to the participation of other countries, particularly Latin American. About 20% of the Master of Sciences students come frome other Latin American countries.

ii) Function of the Project in the Programme: It is linked to the subsectors "Regional Development" and "Environment Preservation" which contain several projects which include aspects of applied hydrology. It is also related, as regards agricultural hydrology, to BRA/74/008 - Irrigation in the San Francisco Valley and, in that part concerned with hydraulic engineering, to BRA/76/019 - Thermal Energy from the Ocean. This project also complements the activities of hydrological measurements of BRA/76/019 - Thermal Energy from the Ocean. This project also complements the activities of hydrological measurements of BRA/72/010 - Hydrology and Climatology in the Amazon. In that part concerning the training of mid-level technicians, it is linked to those projects in the sub-programme "Training of Techno-Professional Manpower".

iii) Government Contribution: Cr$130,343,011 (1976/1979)

iv) UNDP Contribution:

a) The project started in 1976 and is scheduled to end in 1979. The total UNDP contribution should amount to US$ 1,776,550.

b) UNDP contribution in the Second National Development Plan (US$):

	1977	1978	1979	Total
Experts	207,000	192,000	99,000	498,000
Sub-contracts	174,000	190,000	183,000	547,000
Training	56,100	68,200	17,700	142,000
Equipment	20,000	20,000	20,000	60,000
Total	457,100	470,200	319,700	1,247,000

v) Executing Agency: UNESCO

Counterpart Agency: UFRGS/IPH

3.7.1.4. BRA/74/003 Post Graduation Programme in Engineering

1) Objectives

The activities in post graduate engineering started in Brazil in the 1960s. The centres now accredited by the Federal Council of Education (six at Ph.D. level and 36 at MS) have graduated a total of 20 doctors and 1,000 master of sciences. The capacity of these centres is in the order of 600 master of sciences per year, a figure considered satisfactory. Thus, the guidelines defined in the Second PBDCT and First National Plan for Post Graduation (PNPg) for the area of engineering is to strengthen the qualitative performance of the existing centres in preference to stimulating the creation of new courses. Following these lines, the Department of University Affairs (DAV) of the Ministry of Education and Culture (MEC), prepared the present project the objective of which is to consolidate and strengthen, selectively, some of the post graduation centres in engineering and some of the modalities of this science. The Schools covered by this project are: The Federal University of Minas Gerais in the area of Metallurgical Engineering, the Federal University of Bahia in the area of Petrochemical Engineering, the Federal University of Rio de Janeiro in the area of Products Engineering, and the Federal University of Paraiba, in the area of Thermal Engineering. Geographical distribution was kept in mind when the schools benefitting from this project were selected. Two institutions in the Northeastern region have been included to promote a relative decentralization of post graduation activities in engineering which are presently concentrated (85%) in the Southern and Southeastern regions. Specialities were chosen which, by their interdisciplinary nature, may have higher multiplier effects and which, at the same time, may be of real interest both from the point of view of correlation with industrial activities in the region or with important government programmes (Petrochemistry in Bahia; Metallurgy in Minas Gerais; Product Engineering in Rio due to its connexion with the expanding national capital goods industry; Thermal Engineering because of its contribution to the programme of non conventional sources of energy). In addition to attending to specific requirements of each area, the project will, in a general way, have as its objective for all sectors to consolidate and strengthen the existing courses; increase their quality and technical and scientific capacity; assist in the execution of basic and applied research and transfer of the technology; train local university staff.

ii) Function of the Project in the Programme: The project is related to the subsector "Development of New Technologies", and particularly with projec- BRA/76/019 -Thermal Energy from the Ocean and with the subsector "Industrial Technology" through projects BRA/75/003 -Standardization, Quality Control and Certification of Iron and Steel and BRA/76/009 -Standardization, Quality Control and Certification in the Sector of non Ferrous Metals (in that part concerning metallurgical energy); it is also linked to projects BRA/76/011 -Standardization, Quality Control and Certification in the Mechanical Sector and BRA/76/013 -Import Substitution of Capital Goods, in that part referring to mechanical and product engineering. It is also linked to BRA/76/004 -Petrochemical Technology, in that part concerning Petrochemical Engineering.

iii) Government Contribution: Cr$ 76,088,000

iv) UNDP Contribution: US$

	1977	1978	1979	1980	Total
Experts	260,000	380,000	280,000	260,000	1,180,000
Training	28,000	70,000	80,000	80,000	258,000
Equipment	26,000	3,000	3,000	3,000	35,000
Total	314,000	453,000	363,000	343,000	1,473,000

v) Executing Agency: UNESCO

Counterpart Agency: MEC/DAU

3.7.2. Sub-Programme Consolidation in the Basic Instrumental Areas

3.7.2.1. BRA/76/001 - Implemantaion of Documentation and Historical Regional Information Centres

i) Objectives:

To establish two historiography centres linked to two federal universities, one in the Centre-West and the other in the Northeastern region, to strenghten the research methods in the areas of Applied Social Humanities and others that utilize regional history in their studies. With regard to the Northeastern Regional Centre, the project should systematize documentation and produce diagnosis and analysis on subject matters such as:

a) formation of the urban network; b) technology of survival and exploration of the "sertao"; c) history of livestock production in the Northeast; d) migration in the Northeast and processes of national character. The research analysis and diagnosis of the Regional Centre of the Centre-West region will cover matters such as: a) technology of survival and exploration of the Pantanal; b) exploration cycles of mining mineral resources of the Centre-West; c) Regional development of tranport networks; d) commercial and financial relations of the region within the Rio Sao Paulo axis and within Brazil.

The project is part of the present policy of the Ministry of Education and Culture (MEC) to add dynamism to neglected areas of knowledge. Historiography is an important are of high education especially in the fields of human and social sciences. The project will provide tools for obtaining empirical regional knowledge in terms of natural resources, territory, environment, technical and cultural tradition. The project will give a strong support to research in the area of social sciences. Moreover, the project conforms to the guidelines of associating research and teaching to the services to the community. Operating in the Centre-West and Northeastern regions, the benefits deriving from the project in terms of providing knowledge for decision making will also contribute to the integration of these regions into the development process of the country as a whole.

ii) Function of the Project in the Programme:

It is related to projects in the sub-sector "Strengthening of the National Post-Graduation System" in the support to research to be carried out in this area. It is also linked to projects in the sub-sector "Technology Applied to Regional Development" and particularly to BRA/74/028 - Integrated Utilization of the Paraguay River Basin, to which it will be able to supply historiographical assistance.

iii) Government Contribution: Cr.$8,413,000

iv) UNDP Contribution: The UNDP contribution is estimated at US$298,800. The project is scheduled to start in 1978 and end in 1980.

v) Executing Agency: UNESCO

Counterpart Agency: MEC/DAU

3.7.2.2. BRA/76/002 - Consolidation of Basic Biology Teaching and Research at the Federal University of Espirito Santo and the Federal University of Goias.

i) Objectives:

The biological science constitute an indispensable basis for the adequate training of various professionals whose importance is fundamental for national development (doctors, nurses, veterinarians, agronomists, pharmacologists, zootechnicians, ecologists, food technologists, etc.). There is urgent need to improve the formation of technicians and B. A.s in the biological sciences, as well as dynamize and develop research in biological sciences. This project should contribute to improving teaching and research in the basic biological fields, through: a) better equipping the units involved in the project. b) training teachers; c) optimal use of consultants and foreign specialists. It is also intended to establish within the institutes short and long term degree courses in Biological sciences with a view to improving teaching at high school level and research and teaching in higher institutions of learning. The project is in the same category as BRA/76/001 - Implementation of Regional Historiography Documentation and Information Centres which aims at strengthening basic methodology in areas to support post-graduation teaching and research. The DAU/MEC has chosen Biology as the basic science the development of which needs to be accelerated in order to strengthen post-graduated research and make it more dynamic.

ii) Function of the Project in the Programme:

It is related to projects in the sub-sector "Strengthening of the National Post-Graduation System" in those aspects concerned with support to the research to be carried out in these areas. Biological research applied to agricultural industry and to ecology link this project to the areas of Food Technology, Forestry Research (BRA/71/545 - Forestry Research and Development) and to those projects in the sub-sector "Environment Preservation". It is also linked to the sub-sector "Training of Techno-Professional Staff" through the provision of degrees to teachers of secondary school level and for professional training.

iii) Government Contribution: Cr.$ 4,880,000

iv) UNDP Contribution: The project is scheduled to start in 1978 and is scheduled to end in 1980. The UNDP contribution is estimated at US$ 360,000.

v) Executing Agency: UNESCO

Counterpart Agency: MEC/DAU

3.8. Techno-Scientific Support Activities

3.8.1. BRA/76/022 - Strengthening of Research Institutions Concerned with the Study of Science and Technology

i) Objectives: The objective of the project is to promote a programme aimed at providing incentives and to create the necessary conditions for certain selected national institutions to develop study programmes and research programmes covering several aspects of scientific and technological development. The strengthening of these institutions should make them capable of generating knowledge in the following areas of special interest for the formulation and follow-up of Government policies and plans in the science and technology sector: a) understanding of the varying aspects of scientific and technological development and analysis of its inter-dependency with economic and social development; b) understanding of instruments and mechanisms for training in the field of science and technology; c) methodology for the elaboration and follow-up of plans and programmes in the science and technology sector; d) identification and carrying out of statistical studies utilized as an instrument for the formulation of national policies for international comparisons and for an evaluation of the scientific and technological potential of the country.

ii) Function of the Project in the Programme: It is an all-embracing project designed to strengthen the most of the counterpart institutions in the Programme, through support under co-ordination of CNPq, central organ of SNDCT.

iii) Government Contribution: C$ 489,700

iv) UNDP Contribution: (in US$)

	1977	1978	1979	TOTAL
Experts	36,000	72,000	72,000	180,000
Training	12,600	75,600	75,600	163,800
Sundry	3,140	3,140	1,140	8,000
Total	51,740	150,740	149,320	351,800

v) Executing Agency: UNDP (possibly)
Counterpart Agency:CNPq

3.8.2. BRA/76/023 - Training in Administration of Scientific Research

i) Objectives: This project should assist FINEP and PNTE (National Programme for the Training of Executives) in the execution of PROTAP (Training Programme in Administration of Scientific and Technological Research). PROTAP aims at promoting the formation and retraining of technical staff capable of managing basic, applied and development research activities at both governmental and private sector levels.FINEP has already contracted out the preparation of a Model Curriculum for the Training in Administration of Scientific and Technological Research. The greatest possible participation of national institutions and of the knowledge and experience of other countries will be sought. Plans call for the development of curricula for specific sectors based on the above mentioned model.

ii) Function of the Project in the Programme: This project, due to the fact that it is designed to strengthen research and development institutions, is linked to the great majority of projects in the sector Science and Technology. One example is BRA/71/545 - Forestry Research and Development in the sub-sector "Agricultural and livestock Technology ", and BRA/74/009 - Research and Development in Telecommunications, in the sub-sector "Infra-structure Technology".

iii) Government Contribution: Cr$ 8,400,000

iv) UNDP Contribution(in US$)

	1977	1978	1979	TOTAL
Experts	60,000	60,000	60,000	180,000
Training	30,000	30,000	30,000	90,000
Equipment	20,000	20,000	20,000	60,000
Total	110,000	110,000	110,000	330,000

v) Executing Agency: UNDP (possibly)
Counterpart Agency: FINEP/PNTE

3.8.3. BRA/72/010 - Hydrology and Climatology in the Amazon River Basin

i) Objectives: The project aims at obtaining data on the Amazon region for a general survey of its hydrological and climatological conditions for consolidation in a mathematical model to give a precise conception of the local micro-climates. Such a survey aims at providing guidance to agricultural projects and agricultural activities in general, engineering projects, research, follow-up and analysis of environmental evolution, groundwater studies, evaporation and transpiration, geothermy, erosion, drought and flood forecasting. The operation of the mathematical model and the river simulation as well as a reconnaissance "in loco" and investigation of the potential of the tributary rivers, will permit a detailed planning of the utilization of water resources including, principally: generation of energy, improvement of navigation, and possibly extension by connecting the Paraguay and Amazon River Basins.

The immediate objective of the project is the installation of a hydrological network for a survey of data according to the criteria of the agencies involved. The installation of such a network will include: field reconnaissance for the selection of sections for flow measurements, controlling adequate surfaces of hydrological basis at key points of the network, selection of equipment according to local requirements and conditions; installation of equipment and discharge measurement stations, operation and maintenance of same.

ii) Function of the Project in the Programme: The characteristics of the project relate it to projects in the sub-sector "Technology Applied to Regional Development", and "Environment Preservation". In that part concerning the factors that determine micro-climates, it is complemented by BRA/71/545 - Forestry Research and Development. In that part concerning the application of isotopes to hydrology in the region, it has already established direct contact with BRA/71/556 - Application of Nuclear Techniques to Agriculture. Finally, in its aspects of training of technicians, it is linked to BRA/75/007 - Assistance to IPH.

iii) Government Contribution: C$ 33,005,000 (1976/1979)

iv) UNDP Contribution: a) The project is scheduled to start in 1976 and the total UNDP contribution through 1979 is estimated at US$ 1,800,000.

b) UNDP contribution in the Second Country Programme:(US$)

	1977	1978	1979	TOTAL
Sub-Contracts	400,000	600,000	550,000	1,550,000
Total	400,000	600,000	550,000	1,550,000

v) Executing Agency: UNDP in association with WMO
Counterpart Agency: SUDAM

CHAPTER VIII

Ex-IPF Projects

This chapter includes 30 projects, also of a high priority, which the Government wishes to have included in the current programme if and when funds become available. These projects would involve a UNDP contribution of about US$ 12.8 millions according to preliminary estimates.

In view of the fact that this is a supplementary list, the information shown below includes only the name of the project, the counterpart agency, and the estimated UNDP contribution:

SECTOR: EDUCATION/HUMAN RESOURCES	Value US$
1) Broadcasting Training - Ministry of Communication	358,000
2) National Training System for Preservation of the Environment - SEMA (Special Secretariat for Environment)	288,000
3) Human Resources Training for Pulp and Paper Industry : STI (Secretariat of Industrial Technology)	304,000
SECTOR: SCIENCE AND TECHNOLOGY	
1) Development of New Technologies	
a) Management of Radioactive Waste NUCLEBRAS/CNEN	250,000
b) Safety of Nuclear-electric Power Plants NUCLEBRAS/CNEN	440,000
c) Implementation of a Safeguard System - CNEN	112,000
d) Scattering of Slow Neutrons - IEA/CNEN	96,000
e) Nuclear Multiplying Systems - COPPE/CNEN	730,000
f) Fast Reactors Technology - NUCLEBRAS	370,000
g) Advanced Reactor Technology - NUCLEBRAS	420,000
2) Infrastructure Technology: Transport	
a) Flight Safety Institute - DEPV	1,000,000
3) Industrial Technology	
a) Implantation of National Metallurgical Network - STI	1,000,000
b) Development of Basic Servo-motors	100,000
c) Ship Hydrodynamics and Ocean Engineering - STI	300,000
d) Standardization, Quality Control and Certification in the Chemical Sector - STI	425,000
e) Standardization, Quality Control and Certification in the Energy Sector	200,000
f) Standardization, Quality Control and Certification in the Civil Engineering Sector - STI	180,000
g) Standardization, Quality Control and Certification in the Transport Sector - STI	120,000

	Value US$
4) Agricultural and Cattle-breeding Technology	
a) Fisheries Development in Inland Waters (Acquaculture) SUDEPE	1,000,000
b) Soil Management and Conservation in the Eastern Amazon Region - SUDAM	450,000
c) Agricultural Research Region in the Amazon Region - INPA	300,000
d) Programme for the dissemination of Fertilizers and Soil Correctives - (EMBRATER)	444,000
5) Technology Applied to Social Development	
a) Improvement of the Food Diet in the Semi-arid Northeastern Brazil - INUFPE	100,000
b) Housing Technology - CEPED	482,000
6) Technology Applied to Regional Development	
a) Survey of the Savannah Area Resources - EMBRA[illegible]A	200,000
b) Flood Protection - DNOS	588,000
7) Scientific Development and Formation of Human Resources for Research	
a) Post-graduation in Nuclear Engineering - IME	360,000
b) Post-graduation in Aeronautical Engineering ITA/CTA	800,000
c) Post-graduation in Animal and Genetic Plant Physiology - UNICAMP	880,000
8) Techno-scientific Support Activities	
a) Formation of Human Resources for Science and Technology - CNPq	600,000

ANNEX I

Table I

Financial Summary

I. Resources taken into account for programming		
1. Resources available		
a. IPF resources available for programming		$ 30,000.000
b. Other resources (Government financial support)		$ 12,000.000
2. Provision for adequate programming [1/]		$ 8,000.000
Total resources taken into account for programming		$ 50,000.000
II. Use of resources		
1. Programmed (all sectors)		
(a) Ongoing projects	$ 19,433.300	
(b) New projects included in the Country Programme	$ 18,131.400	
Total		$ 37,799.900
2. Reserve		$ 4,200.100
Total resources programme		$ 42,000.000

1/ In accordance with Guidelines Section 3 (b): Adequate programming.

Country: BRAZIL
Country Programme: 1977-1981

TABLE II: PROJECTION OF EXPENDITURES

IPF: US$30,000,000

Estimated Govern.Contr. in thousand US$	Executing Agency	Remarks	Sectors and Projects	ESTIMATED UNDP CONTRIBUTION (thousand US$) 1977	1978	1979	1980	1981	TOTAL	198
29,435.0	UNIDO		BRA/75/003 - Standardization, Quality Control and Quality Certification in the Iron and Steel Industry	548.2	559.7	263.7	101.2		1,472.8	
35,000.0	UNESCO		BRA/75/007 - Post-graduation in Applied Hydrology (CHA II)	457.1	470.2	319.7			1,247.0	
67,469.0	UNIDO		BRA/75/018 - Standardization, Quality Certification and Industrial Quality	256.6	249.6	249.6	83.6		839.4	
51,000.0	ILO		BRA/75/035 - Professional Training - CENAFOR II	200.0					200.0	
			b) Small-scale							
5,100.0	FAO		BRA/75/029 - Dairy Products Technology	36.0	36.0				72.0	
1,010,654.2			Sub-Total A	7,745.7	6,818.9	2,135.2	184.8		16,884.6	
			B - New Projects							
			a) Large-scale							
76.088.0	UNESCO		BRA/74/003 - Post-graduation in Engineering	314.0	453.0	363.0	343.0		1,473.0	
55.000.0	UNESCO		BRA/75/001 - Post-graduation in Chemistry	270.0	290.0	240.0			800.0	
29,000.0	ILO		BRA/75/010 - Assistance to the Occupational Safety Centre	211.3	160.1	45.1			416.5	
40,000.0	FAO		BRA/75/022 - Dairy Cattle Production	243.7	132.0				375.7	
45,000.0	FAO		BRA/75/023 - Beef Cattle Production	234.9	144.0				378.9	
0,413.0	UNESCO		BRA/76/001 - Institutionalization of Regional Centres for Historical Documentation and Information		95.0	120.0	83.8		298.8	
4,880.0	UNESCO		BRA/76/002 - Basic Biology Teac.& Res.at UFES and UFGo		100.0	150.0	110.0		360.0	
90,976.0	*		BRA/76/004 - Petrochemical Technology		150.0	200.1	225.0	175.4	750.5	
90,700.0	*		BRA/76/005 - Urban Studies and Research		210.0	240.0	223.6		673.6	
15.600.0	UNIDO		BRA/76/006 - Coal Gasification		150.0	230.0	199.0		579.0	
151.155.0	*		BRA/76/007 - Electrical Energy Research Centre		90.0	100.0	110.0	72.0	372.0	
15.050.0	UNIDO		BRA/76/008 - Standardization, Quality Control and Quality Certification in the Agro-Industrial Sector		90.0	110.0	110.0	105.6	415.6	
15.050.0	UNIDO		BRA/76/009 - Standardization, Quality Control and Quality Certification in the Non-Ferrous Materials Sector		85.0	120.0	110.0	99.6	414.6	
24,000.0	UNIDO		BRA/76/010 - Standardization, Quality Control and Quality Certification in the Electric-Electronic Sector		150.0	180.1	220.0	193.2	743.3	
21,800.0	UNIDO		BRA/76/011 - Standardization, Quality Control and Quality Certification in the Mechanical Sector		150.0	190.0	180.0	122.3	642.3	
30.000.0	UNIDO		BRA/76/012 - Industrial Pollution Control		160.0	200.0	220.7	170.0	750.7	
111.222.6	*		BRA/76/013 - Import Substitution of Capital Goods		350.0	450.0	550.0	350.5	1,700.5	200.0

* To be determined

TABLE II: PROJECTION OF EXPENDITURES

Country: BRAZIL
Country Programme: 1977-1981

IPF: US$30,000,000

Estimated Govern.Contr. in thousand C$	Executing Agency	Remarks	Sectors and Projects	ESTIMATED UNDP CONTRIBUTION (thousand US$)						
				1977	1978	1979	1980	1981	TOTAL	1982
			B - New Projects							
			a) Large-scale:							
17,719.8	FAO		BRA/75/024 - Marketing of Fish Products	251.9	290.4				542.3	
9,541.4	FAO		BRA/76/017 - Centre for Human Resources Development for Marketing of Agricultural Products		150.0	200.0	189.1		539.1	
			b) Small-scale:							
			none							
27,261.2			Sub-Total B	251.9	440.4	200.0	189.1		1.081.4	
108,731.8			Total Sector II	720.5	912.9	511.9	189.1		2.334.4	
			III) SCIENCE AND TECHNOLOGY							
			A - On-going Projects							
			a) Large-scale:							
17,504.0	FAO		BRA/57/524 - Expansion of Work in Pesticides	217.0	132.0				349.0	
7,000.0	FAO		BRA/69/533 - Agricultural Education Univ.Santa Maria	218.0	145.0				363.0	
78,550.0	FAO		BRA/69/535 - Increase and Development of Wheat Production	281.8	281.8	281.7			845.3	
145,000.0	FAO		BRA/71/545 - Forestry Development and Research	565.0	430.0				995.0	
139,300.0	WHO/PAHO		BRA/71/547 - Pollution Control, São Paulo	250.0	150.0				400.0	
10,000.0	FAO		BRA/71/552 - Livestock Development in the Northeast	132.0	72.0				204.0	
5,000.0	FAO		BRA/71/555 - Tropical Fruits Processing	262.6	177.2	65.5			505.3	
18,140.0	IAEA		BRA/71/556 - Application of Nuclear Techniques to Agriculture	165.0	180.0	165.0			510.0	
40,000.0	UNDP/WIPO		BRA/71/559 - Modernisation of the Brazilian Patent System	835.1	469.1				1,304.2	
29.000.0	UNIDO		BRA/71/560 - Assistance to the Nat.Inst.of Weights & Measures	223.5	57.0				280.5	
27.500.0	WHO/PAHO		BRA/71/563 - Drug Quality Institute	350.6	382.9				733.5	
30.000.0	UNDP		BRA/72/010 - Hydrology & Climatology of the Amazon River Basin	400.0	600.0	550.0			1,550.0	
5.000.0	WHO/PAHO		BRA/73/003 - Environmental Sanitation, Rio de Janeiro	250.0	200.0				450.0	
87.700.0	ICAO		BRA/73/004 - Airworthiness Certification	575.0	719.8				1,295.5	
2.000.0	FAO		BRA/73/017 - Meat and Milk Technology	144.0	96.0				240.0	
3.251.4	UNDP		BRA/74/007 - Yaguaron River Basin	130.0					130.0	
5.808.4	FAO		BRA/74/008 - São Francisco Basin Irrigation	239.4	149.0				388.4	
103.050.0	ITU		BRA/74/009 - Telecommunications,Research and Development	300.0	434.6				734.6	
15.766.4	IBRD		BRA/74/012 - Highway Maintenance and Utilisation	518.0	557.0				1.075.0	
53.000.0	UNDP		BRA/74/028 - Pantanal Development Programme	190.0	270.0	240.0			700.0	

TABLE II: PROJECTION OF EXPENDITURES

Country: BRAZIL
Country Programme: 1977-1981

IPF: US$30,000.000

Estimated Govern.contr. in thousand C$	Executing Agency	Remarks	Sectors and Projects	ESTIMATED UNDP CONTRIBUTION (thousand US$)						
				1977	1978	1979	1980	1981	TOTAL	1982
			I) EDUCATION: HUMAN RESOURCES							
			A) On-going Projects							
			a) Large-scale:							
6,500.0	UNDP		BRA/70/550 - Human Resources Planning	446.8	403.4				850.2	
1,013.0	ILO		BRA/74/001 - Foundry Centre, Itauna	43.3					43.3	
5,376.7	ICAO		BRA/74/004 - Aeronautical Training	468.0	89.8				557.8	
2,146.0	ITU		BRA/74/010 - Telecommunications Human Resources	238.5	6.0				244.5	
			b) Small-scale:							
			none							
15,035.7			Sub-Total A	1,196.6	499.2				1,695.8	
			B) New Projects							
			a) Large-scale:							
18,822.5	IAEA		BRA/76/003 - Training in Nuclear Energy	740.0	1,074.0	240.0	57.5		2.111.5	
231,600.0	ILO		BRA/76/014 - National System for Manpower Training		322.0	322.0	322.0		966.0	
114,820.0	IMCO		BRA/76/015 - Training of Merchant Marine Personnel	511.0	521.5	111.0			1,143.5	
			b) Small-scale:							
			none							
365,242.5			Sub-Total B	1,251.0	1,917.5	673.0	379.5		4,221.0	
380,278.2			Total Sector I	2,447.6	2,416.7	673.0	379.5		5,916.8	
			II) AGRICULTURE							
			A) On-going Projects							
			a) Large-scale:							
61,590.0	FAO		BRA/71/553 - Agricultural Planning and Training	380.0	280.5	208.5			869.0	
19,880.6	FAO		BRA/72/020 - National Centre of Agricultural Documentation	88.6	192.0	103.4			384.0	
			b) Small-scale:							
			none							
81,470.6			Sub-Total A	468.6	472.5	311.9			1,253.0	

TABLE II: PROJECTION OF EXPENDITURES

Country: BRAZIL
Country Programme: 1977-1981

IPF: US$30,900,000

Estimated Govern.Contr. in thousand C$	Executing Agency	Remarks	Sectors and Projects	ESTIMATED UNDP CONTRIBUTION (thousand US$)						
				1977	1978	1979	1980	1981	TOTAL	1982
1,200.0	*		BRA/76/017 - Oceanography		70.0	100.0			170.0	
5,883.0	UNDP		BRA/76/019 - Thermal Ocean Energy	70.6	75.6	45.6			191.8	
4,209.7	*		BRA/76/022 - Strengthening Science and Teach.Institutes	51.7	150.8	149.3			351.8	
8,400.0	*		BRA/76/023 - Training in Administration of Scientific Res.	110.0	110.0	110.0			330.0	
			b) Small-scale:							
6,500.0	WHO/PAHO		BRA/75/033 - Environmental Studies of Lake Paranoa	42.3	40.5				82.8	
3,000.0	*		BRA/75/040 - Housing Technology	80.0	46.2				126.2	
3,854.0	IAEA		BRA/76/018 - Neutron Diffractometry	25.0	43.0	14.0	15.0	1.0	98.0	
5,531.0	*		BRA/76/020 - Bio-convertion of Crops for Production of Alcohol	85.7	13.8	9.0			108.5	
1,920.0	WHO/PAHO		BRA/76/021 - Tropical Medicine	37.0	23.0				60.0	
864,512.3			Sub-Total B	1.776.2	3.532.0	3.366.2	2.700.1	1,289.6	12.664.1	200.0
,875,166.5			Total Sector III	9.521.9	10.350.9	5.501.4	2.884.9	1,289.6	29.548.7	200.0
.364,176.5			Total all Sectors	12.690.0	13.680.5	6.686.3	3.453.5	1.289.6	37.799.9	200.0
			Non programmed reserve				1.200.1	3.000.0	4.200.1	
			GRAND TOTAL	12.690.0	13.680.5	6.686.3	4.653.6	4.289.6	42.000.0	200.0
			IPF						30.000.0	
			Government Financial Support						12.000.0	

* To be determined

TABLE III

EDUCATION/HUMAN RESOURCES SECTOR

Sub-programmes/Projects	UNDP Contribution US$ *	Government Contribution Cr$
I. **Strengthening of Manpower Planning System**		
BRA/70/550 - Human Resources Planning	850.162	6,500,000
BRA/76/014 - National System for Manpower Training	966,000	231,600,000
Total of Sub-programme	1,816,162	238,100,000
II. **Professional Personnel Training**		
BRA/74/001 - Establishment of Foundry Centre in Itauna	43,300	1,013,000
BRA/74/004 - Aeronautical Training	557,787	5,376,740
BRA/74/010 - Telecommunications Human Resources	244,550	2,146,000
BRA/76/003 - Training in Nuclear Energy	2,111,500	18,822,500
BRA/76/015 - Training of Merchant Marine Personnel (CIABA)	1,143,500	114,820,000
Total of Sub-programme	4,100,637	142,178,240
Total of Sector	5,916,799	380,278,240

*Includes financial support of the Government

TABLE IV

AGRICULTURAL SECTOR

Sub-programmes/Projects	UNDP Contribution US$ *	Government Contribution G$
I. Consolidation of the National System for Agricultural Planning		
BRA/71/553 - Agricultural Planning and Training	869,000	61,590,000
BRA/72/020 - National Centre of Agricultural Documentation	384,000	19,880,600
Total of sub-programme	1,253,000	81,470,600
II. Marketing of Primary Products		
BRA/75/024 - Marketing of Fish Products	542,300	17,719,800
BRA/76/017 - Centre for Human Resources Development for Marketing of Agricultural Products	539,100	9,541,414
Total of Sub-programme	1,081,400	27,261,214
Total of Sector	2,334,400	108,731,814

* Includes financial support of the Government

TABLE V

SCIENCE AND TECHNOLOGY SECTOR

Sub-sector/Sub-programme/Project	UNDP Contribution US$	Government Contribution Cr$
I. Development of New Technologies		
BRA/71/556 - Application of Nuclear Techniques to Agriculture	510,000	18,140,000
BRA/76/006 - Coal Gasification	579,000	15,600,000
BRA/76/017 - Oceanography	170,000	1,200,000
BRA/76/018 - Neutron Diffractometry	98,000	3,854,000
BRA/76/019 - Thermal Ocean Energy	191,800	5,883,000
BRA/76/020 - Bio-conversion of Crops for production of Alcohol	108,500	5,531,000
Total of Sub-sector	1,657,300	50,208,000
II. Technology for Infrastructure: Transport, Energy and Communication		
BRA/74/009 - Telecommunications, Research and Development	734,600	103,050,000
BRA/74/012 - Highway Maintenance and Utilization	1,075,000	15,766,415
BRA/76/007 - Electrical Energy Research Centre (CEPEL)	372,000	151,155,000
Total of Sub-sector	2,181,600	269,971,415
III. Industrial Technology		
A) Consolidation of the Infrastructure of Industrial Technology		
BRA/71/559 - Modernization of the Brazilian Patent System	1,304,200	40,000,000
BRA/71/560 - Assistance to the National Institute of Weights and Measures	280,500	29,000,000
BRA/73/004 - Airworthiness Certification	1,295,600	87,700,000
BRA/75/003 - Standardization, Quality Control and Quality Certification of the Iron & Steel Industry	1,472,800	29,435,000
BRA/75/010 - Standardization, Quality Certification and Industrial Quality	839,400	67,469,000
BRA/76/008 - Standardization, Quality Control and Quality Certification in the Agro-industrial Sector	415,600	15,050,000
BRA/76/009 - Standardization, Quality Control and Quality Certification in the Non-ferrous Materials Sector	414,600	15,050,000
BRA/76/010 - Standardization, Quality Control and Quality Certification in the Electric-electronic Sector	743,250	24,000,000
BRA/76/011 - Standardization, Quality Control and Quality Certification in the Mechanical Sector	642,300	21,800,000
BRA/76/012 - Industrial Pollution Control	750,750	30,000,000
Total of Sub-programme	8,159,000	359,504,000
B) Technological Development of Priority Sectors		
BRA/71/555 - Tropical Fruits Processing Centre	505,300	5,000,000
BRA/73/017 - Meat and Milk Technology	240,000	2,000,000
BRA/75/029 - Dairy Products Technology	72,000	5,100,000
BRA/76/004 - Petrochemical Technology	750,450	90,976,000
BRA/76/013 - Import Substitution of Capital Goods	1,700,550	111,222,653
Total of Sub-programme	3,268,300	214,298,653
Total of Sub-sector	11,427,300	573,802,653

IV. Agricultural-Livestock Technology

BRA/67/524 - Expansion of the Work in Pesticides	349,000	17,503,997
BRA/69/535 - Increase and Development of Wheat Production	845,250	78,550,000
BRA/71/545 - Forestry Development and Research	995,000	145,000,000
BRA/71/552 - Livestock Development in the Northeast	204,000	10,000,000
BRA/74/008 - San Francisco Basin Irrigation	388,400	5,888,400
BRA/75/022 - Dairy Cattle Production	375,750	40,000,000
BRA/75/023 - Beef Cattle Production	378,900	45,000,000
Total of Sub-sector	3,536,300	341,942,397

V. Technology Applied to Social Development

A) Health

BRA/71/563 - Drug Quality Institute	733,500	27,500,000
BRA/75/010 - Assistance to the Occupational Safety Centre	416,500	29,000,000
BRA/76/021 - Tropical Medicine	60,000	1,920,000
Total of Sub-programme	1,210,000	58,420,000

B) Environmental Protection

BRA/71/547 - Pollution Control, São Paulo	400,000	139,300,000
BRA/73/003 - Environmental Sanitation, Rio de Janeiro	450,000	5,000,000
BRA/75/033 - Environmental studies of Lake Paranoa	82,800	6,500,000
Total of Sub-programme	932,800	150,800,000

C) Urban Development and Housing

BRA/75/040 - Housing Technology	126,200	3,000,000
BRA/76/005 - Urban Studies and Research	673,650	90,700,000
Total of Sub-programme	799,850	93,700,000

D) Educational Technology

BRA/75/035 - Professional Training - CENAFOR II	200,000	51,000,000
Total of Sub-programme	200,000	51,000,000
Total of Sub-sector	3,142,650	353,920,000

VI. Technology Applied to Regional Development

BRA/74/007 - Integrated Development of the Yaguaron River Basin	130,000	3,251,400
BRA/74/028 - Pantanal Development Programme	700,000	53,000,000
Total of Sub-sector	830,000	56,251,400

VII. Scientific Development and Training of Human Resources for Research

A) Strengthening of the National System for Post-graduation

BRA/69/533 - Agricultural Education at University of Santa Maria	363,000	7,000,000
BRA/74/003 - Post-Graduation in Engineering	1,473,000	76,088,000
BRA/75/001 - Post-graduation in Chemistry	800,000	55,000,000
BRA/75/007 - Post-graduation in Applied Hydrology (CHA II)	1,247,000	35,000,000
Total of Sub-programme	3,883,000	173,088,000

B) Consolidation of Basic Research

BRA/76/001-	Institutionalization of Regional Centres for Historical Documentation and Information	298,800	8,413,000
BRA/76/002-	Basic Biology Teaching and Research at UFES and UFGO	360,000	4,880,000
	Total of Sub-programme	658,800	13,293,000
	Total of Sub-sector	4,541,800	186,381,000

VIII. Technical and Scientific Support

BRA/72/010-	Hydrology and Climatology of the Amazon River Basin	1,550,000	30,000,000
BRA/76/022-	Strengthening of Science and Technology Institutes	351,800	8,289,700
BRA/76/023-	Training in Administration of Scientific Research	330,000	8,400,000
	Total of Sub-sector	2,231,800	46,689,700

Total of Sector	29,548,750-1,879,166,565

ANNEX II

BASIC DATA ON BRAZIL

TABLE I

POPULATION

ITEM	YEAR	DATA
1. Total (resident) Population (inhabitants)	1970	93,139,037
2. Density (inhabitants per km^2)	1970	11,01
3. Percentage of population aged between 0 and 14	1970	14.50
4. Percentage of urban population	1970	55.90
5. Average annual gross population growth rate (percent)	1960/70	2.90
6. Gross birth rate (per 1,000 inhabitants)	1970	36.65
7. Gross mortality rate (per 1,000 inhabitants)	1970	9.07

SOURCE: Brazilian Institute of Geography and Statistics (IBGE)/ Institute of Economic and Social Planning (IPEA). 1960 and 1970 Censi.

TABLE II

OCCUPATION

ITEM	YEAR	PERCENTAGE
1. Percentage of Active Population	1970	31.7
2. Unemployment Rate	1970	2.0
3. Underemployment Rate (*)	-	-

SOURCE: IBGE (1970 Census)/IPEA

(*) Information not quantified as yet.

TABLE III

EDUCATION

ITEM	YEAR	PERCENTAGE
Literacy Rate	1970 (*)	66.89

SOURCE: IBGE/IPEA

(*) Population aged 15 or above, according to the Demographic Census of 1970.

TABLE IV

HEALTH

ITEM	YEAR	DATA
1. Number of doctors per 1,000 inhabitants	1971	0.70
2. Infant Mortality Rate per 1,000 inhab.	1974 (*)	60.40
3. Life Expectancy at Birth (years)		
3.1. Men		58.83
3.2. Women		63.12

SOURCE: IBGE/IPEA

(*) Surveys conducted on state capitals only.

TABLE V

GROSS DOMESTIC PRODUCT - GDP - (TOTAL AND PER CAPITA)

G D P	Y E A R						GROWTH RATE
	1959	1970	1971	1972	1973	1974 (*)	70/74
TOTAL (US$ millions)**	9,394.5	44,964.0	51,866.0	60,521.2	77,878.7	99,481.5	121.2%
PER CAPITA (US$)	140.9	484.7	543.5	599.1	750.0	931.9	92.3%

SOURCE: Getulio Vargas Foundation (FGV)/IPEA

(*) Preliminary figures

(**)Exchange rates: 1959: Cr$0.221/US$1.00
1970: Cr$4.594/US$1.00
1971: Cr$5.288/US$1.00
1972: Cr$5.934/US$1.00
1973: Cr$6.127/US$1.00
1974: Cr$6.792/US$1.00

TABLE VI

DOMESTIC INCOME* BY SECTORS

1959 and 1970/1974

US$ millions (**)

SECTOR	YEAR						GROWTH RATE 1970/74
	1959	1970	1971	1972	1973	1974	
AGRICULTURE	1,554.3	5,262.9	6,505.5	7,358.3	9,533.7	10,340.2	96.5%
INDUSTRY	2,308.6	11,777.1	13,363.3	15,804.4	18,738.8	20,273.5	72.1%
SERVICES	3,817.8	18,940.8	21,951.2	25,574.5	32,134.5	35,508.6	87.5%
MIN. & HYDROCAR.***	-	-	-	-	-	-	-

SOURCE: FGV/IPEA

(*) No information available on the GDP at sector level

(**) Exchange rates: 1959: Cr$ 0.221/US$ 1.00
1970: Cr$ 4.594/US$ 1.00
1971: Cr$ 5.288/US$ 1.00
1972: Cr$ 5.934/US$ 1.00
1973: Cr$ 6.127/US$ 1.00
1974: Cr$ 6.792/US$ 1.00

(***) No information

TABLE VII

INVESTMENT

1959 and 1970/1974

YEAR	GROSS US$ MILLIONS (**)	% OF GDP	PUBLIC SECTOR (*) US$ MILLIONS (**)
1959	1,780.0	18.9	383.7
1970	9,456.1	21.0	1,800.8
1971	11,272.3	21.7	2,003.7
1972	13,323,7	22.0	2,339.7
1973	17,635.8	22.6	2,947.7
1974 (***)	-	-	-

SOURCE: FGV/IPEA

(*) Not including entrepreneurial activities of the public sector

(**) Exchange rates:
1959: Cr$ 0.221/US$ 1.00
1970: Cr$ 4.594/US$ 1.00
1971: Cr$ 5.288/US$ 1.00
1972: Cr$ 5.934/US$ 1.00
1973: Cr$ 6.127/US$ 1.00
1974: Cr$ 6.792/US$ 1.00

(***) Figures not available as yet.

TABLE VIII

PUBLIC EXPENDITURES(*)

YEAR	TOTAL US$ MILLIONS(**)	% IN EDUCATION	% IN HEALTH (***)	% FINANCED BY TAXES
1959	2,418,5	7.9	5.9	77.7
1970	12,886.0	8.3	6.2	84.9
1971	14,705.0	8.4	5.7	85.5
1972	18,247.4	8.5	5.7	86.4
1973	24,500.7	7.9	5.4	85.7
1974****	-	-	-	-

SOURCE: FGV/IPEA

(*) Including decentralized administration

(**) Exchange rates: 1959: Cr$ 0.221/US$ 1.00
1970: Cr$ 4.594/US$ 1.00
1971: Cr$ 5.288/US$ 1.00
1972: Cr$ 5.934/US$ 1.00
1973: Cr$ 6.127/US$ 1.00
1974: Cr$ 6.792/US$ 1.00

(***) Including Social Security (INPS) expenditures, with the exception of 1959.

(****) Figures not available as yet.

TABLE IX

FOREIGN TRADE

EXPORTS & IMPORTS

US$ MILLIONS - FOB

YEAR	EXPORTS	IMPORTS
1959	1,270.0	1,293.0
1970	2,739.0	2,507.0
1971	2,904.0	3,245.0
1972	3,991.0	4,325.0
1973	6,199.0	6,192.0
1974	7,968.0	12,635.0

SOURCE: FGV/CACEX (Foreign Trade Division of Central Bank)/IPEA

TABLE X

FOREIGN TRADE

MAIN EXPORT PRODUCTS

US DOLLARS MILLIONS FOB

PRODUCT	YEAR											
	1959		1970		1971		1972		1973		1974	
	VALUE	% OF TOTAL	VALUE	% OF TOTAL	VALUE	% OF TOTAL	VALUE	% OF TOTAL	VALUE	% OF TOTAL	VALUE	% OF TOTAL
UNGROUND COFFEE	733	57.7	939	34.3	772	26.6	989	24.8	1,243	20.1	877	11.0
RAW CANE	33	2.6	126	4.6	146	5.0	314	7.9	455	7.3	978	12.3
SOY BEANS	5	0.4	27	1.0	24	0.8	127	3.2	494	8.0	585	7.3
IRON ORE	43	3.4	209	7.6	237	8.2	231	5.8	362	5.8	571	7.2
SOY MEAL AND FLOUR	-	-	44	1.6	81	2.8	152	3.8	423	6.8	303	3.8
CRYSTAL SUGAR	9	0.7	-	-	-	-	-	-	93	1.6	283	3.6
COCOA BEANS	59	4.6	78	2.9	62	2.1	59	1.5	88	1.4	210	2.6
RAW COTTON	35	2.8	154	5.6	137	4.7	109	4.7	218	3.5	91	1.1
INSTANT COFFEE	-	-	42	1.5	49	1.7	68	1.7	100	1.6	125	1.6
FOOTWEAR	-	-	8	0.3	29	1.0	55	1.4	93	1.5	120	1.5
CASTOR OIL (NATURAL)	9	0.7	38	1.4	40	1.4	54	1.4	122	2.0	128	1.6
SISAL	18	1.4	16	0.6	15	0.5	22	0.5	59	1.0	114	1.4
CORN	-	-	81	3.0	75	2.6	10	0.2	3	0.1	138	1.7
TOBACCO LEAVES	15	1.2	31	111	37	1.3	47	1.2	58	0.9	99	1.3
MAIN PRODUCTS	959	75.5	1,793	65.5	1,704	58.7	2,317	58.1	3,817	61.6	4,622	58.0
GRAND TOTAL	1,270	100.0	2,739	100.0	2,904	100.0	3,991	100.0	6,199	100.0	7,968	100.0

SOURCE: IBGE/CACEX/IPEA

TABLE XI

FOREIGN TRADE

MAIN IMPORT PRODUCTS

(1972/1974)*

US$ MILLIONS - FOB

		YEAR					
		1972		1973		1974	
		VALUE	% OF TOTAL	VALUE	% OF TOTAL	VALUE	% OF TOTAL
01.	Petroleum (natural or crude)	344	8.0	606	9.8	2,558	20.1
02.	Shelled Wheat	122	2.8	235	5.4	468	3.7
03.	Uncoated Steel and Iron Plates more than 4.75 mm wide	5	0.1	55	0.9	309	2.5
04.	Idem, less than 3 mm wide	32	0.7	93	1.5	257	2.0
05.	Copper Bars for Wire	79	1.8	131	2.1	241	1.9
06.	Jet Planes	41	1.0	58	1.0	184	1.5
07.	Superphospates	37	0.9	39	0.6	146	1.2
08.	Paper (more than 35g/m^2)	49	1.1	63	1.0	144	1.1
09.	Caterpillar Tractors	80	1.8	70	1.1	111	0.9
10.	Steel or Iron, Shaped	8	0.2	20	0.3	109	0.9
11.	Naphtas	25	0.6	41	0.7	108	0.9
	MAIN PRODUCTS	822	19.0	1,511	24.4	4,635	36.7
	TOTAL IMPORTS	4,325	100.0	6,192	100.0	12,635	100.0

SOURCE: CACEX/IPEA

(*) Commodity classification difficulties prevented this statistical breakdown in 1959, 1970 and 1971

TABLE XII

FOREIGN TRADE - EXPORTS

MAIN COUNTRIES, 1959 and 1970/74

US$ MILLIONS - FOB

COUNTRY	YEAR											
	1959		1970		1971		1972		1973		1974	
	VALUE	% OF TOTAL	VALUE	% OF TOTAL	VALUE	% OF TOTAL	VALUE	% OF TOTAL	VALUE	% OF TOTAL	VALUE	% OF TOTAL
01. United States	589	46.4	676	24.7	760	26.2	931	23.3	1,122	18.1	1,737	21.8
02. Netherlands	-	-	154	5.6	176	6.1	308	7.7	621	10.0	605	7.6
03. West Germany	87	6.9	235	8.6	256	8.8	337	8.4	555	8.9	570	7.2
04. Japan	29	2.3	145	5.3	158	5.4	180	4.5	425	6.9	557	7.0
05. United Kingdom	-	-	130	4.7	127	4.4	180	4.5	311	5.0	375	4.7
06. Italy	37	2.9	198	7.2	203	7.0	269	6.5	352	5.7	357	4.5
07. Argentina	41	3.2	185	6.7	200	6.9	154	3.9	198	3.2	302	3.8
08. Spain	7	0.5	107	3.9	94	3.2	144	3.6	211	3.4	302	3.8
09. France	-	-	110	4.0	96	3.3	139	3.5	209	3.4	269	3.4
10. Iraq	-	-	-	-	4	0.1	4	0.1	38	0.6	157	2.0
11. Belgium-Luxembourg	26	2.0	73	2.7	63	2.2	78	2.0	156	2.5	145	1.8
12. U.S.S.R.	-	-	21	0.8	45	1.5	79	2.0	147	2.4	135	1.7
13. Canada	14	1.1	41	1.5	43	1.5	50	1.3	69	1.1	95	1.2
14. Venezuela	29	2.3	8	0.3	11	0.4	25	0.6	63	1.0	86	1.1
MAIN PRODUCTS (SUB-TOTAL)	859	67.6	2,483	76.0	2,235	77.0	2,878	72.1	4,477	72.2	5,692	71.6
TOTAL	1,270	100.0	2,739	100.0	2,904	100.0	3,991	100.0	6,199	100.0	7,951	100.0

SOURCE: IBGE/CACEX/IPEA

TABLE XIII

FOREIGN TRADE - IMPORTS

MAIN COUNTRIES, 1959 and 1970/74

US$ MILLIONS - FOB

COUNTRY	YEAR											
	1959		1970		1971		1972		1973		1974	
	VALUE	% OF TOTAL	VALUE	% OF TOTAL	VALUE	% OF TOTAL	VALUE	%% OF TOTAL	VALUE	% OF TOTAL	VALUE	% OF TOTAL
01. United States	458	35.4	824	32.9	953	29.4	1,206	27.9	1,731	28.0	3,071	24.3
02. West Germany	138	10.7	327	13.0	432	13.3	600	13.9	788	12.7	1,592	12.6
03. Saudi Arabia	-	-	39	1.6	86	2.7	143	3.3	257	4.1	1,187	9.4
04. Japan	25	1.9	159	6.3	229	7.1	322	7.4	538	8.7	1,093	8.7
05. Iraq	-	-	30	1.2	37	1.1	63	1.5	139	2.2	597	4.7
06. Canada	14	1.1	61	2.4	88	2.7	87	2.0	115	1.9	412	3.3
07. Argentina	100	7.7	148	5.9	120	3.7	197	4.5	319	5.2	360	2.8
08. Italy	27	2.1	81	3.2	114	3.5	185	4.3	202	3.3	342	2.7
09. United Kingdon	-	-	146	5.8	195	6.0	202	4.7	243	3.9	323	2.6
10. Libya	-	-	8	0.3	12	0.4	17	0.4	53	0.9	318	2.5
11. France	-	-	79	3.2	131	4.0	167	3.8	210	3.4	305	2.4
12. Belgium-Luxembourg	15	1.2	40	1.6	53	1.6	64	1.5	95	1.5	306	2.4
13. Sweden	45	3.5	50	2.0	70	2.2	88	2.0	143	22.3	240	1.9
14. Netherlands	-	-	44	1.8	52	1.6	104	2.4	143	2.3	244	1.9
MAIN COUNTRIES	822	63.6	2,036	81.2	2,572	79.3	3,445	79.6	4,976	80.4	10,390	82.2
TOTAL	1,29[illegible]	100.0	2,507	100.0	3,245	100.0	4,325	100.0	6,192	100.0	12,635	100.0

SOURCE: IBGE/CACEX/IPEA

TABLE XVI

INTERNATIONAL RESERVES OF THE CENTRAL BANK

US$ MILLIONS

I T E M	1970	1971	1972	1973	1974
Gold and Foreign Exchange	1,197.0	1,723.0	4,175.0	6.416.0	5,247.0
Guaranteed Circulation in Foreign Exchange (net)	1.5	1.7	1.3	1.3	1.5

SOURCE: Central Bank of Brazil/IPEA

TABLE XIV

BALANCE OF PAYMENTS

1959 and 1970/74

US$ MILLIONS

ITEM	1959	1970	1971	1972	1973	1974
1. Balance of Trade - FOB	72	232	-341	-244	7	-4,667
Exports	1,282	2,739	2,904	3,991	6,199	7,968
Imports	-1,210	-2,507	-3,245	-4,235	-6,192	-12,635
2. Services	-373	-815	-980	-1,250	-1,722	-2,313
Revenue	159	378	421	557	944	1,612
Expenditures (*)	-532	-1,139	-1,401	-1,807	-2,666	-3,925
3. Unilateral Transfers	-10	21	14	5	27	0
Revenue	11	87	95	104	128	137
Expenditures	-21	-66	-81	-99	-101	137
4. Current Transactions (1 + 2 + 3)	-311	-562	-1,307	-1,489	-1,688	-6,980
5. Net Capital Turnover(*)	182	1,015	1,846	3,492	3,512	5,957
6. Errors and Ommissions	-25	92	-9	436	355	85
7. Reult	-154	545	530	2,439	2,179	-938
8. Financing of Result(**)	154	-545	-530	-2,439	2,179	938
Transactions with IMF	-21	-167	-47	-70	-33	-10
Short-Term Receivables	26	-396	-635	-2,569	-2,804	786
Short-Term Liabilities	150	18	152	200	658	162
Monetary Gold	-1	-	-	-	-	-

SOURCE: Central Bank of Brazil/IBGE/IPEA

(*) Excluding reinvestments

(**) (+) = increase; (-) = decrease

ANNEX III

LIST OF ABBREVIATIONS

ABBREVIATIONS

BNDE - National Bank for Economic Development

BNH - National Housing Bank

CACEX - Foreign Business Department of the Bank of Brazil

CAESB - Water and Sewage Company of Brasilia

CAT - Centre for Technical Actualization of the Electronic and Flight Protection Directorate

CENA - Centre for Nuclear Energy Applied to Agriculture

CENAFOR - National Centre for Professional Development

CEPED - Centre for Research and Development (Bahia State)

CEPEL - Centre for Electric Energy Research

CETEC - Technological Centre Foundation of Minas Gerais

CETESB - State Company for Technology of Basic Sanitation and Defense of the Environment(Sao Paulo State)

CIABA - Braz de Aguiar Instruction Centre

CLM - Comission for Merin Lagoon

CNEN - National Comission for Nuclear Energy

CNPq - National Council for Scientific and Technological Development

CNPU - National Comission for Urban Policies

CNRH - National Centre for Human Resources

COBAL - Brazilian Food Company

CODEVASF - Sao Francisco River Valley Development Company

CONSIDER - Council for Non-ferrous Metals and Steel

CTA - Technical Aerospace Centre

DAU - Department for University Affairs, Ministry of Education and Culture

DCOPT - Division of Technical Cooperation, Ministry of Foreign Affairs

DEPV - Directorate for Electronics and Flight Protection

DNOS - National Department for Works and Sanitation

ECT - Brazilian Company for Mail and Telegraph

ELETROBRAS - Brazilian Electric Company

EMBRAPA - Brazilian Agricultural Research Company

EMBRATER - Brazilian Company for Technical Assistance and Rural Extension

EMBRATUR - Brazilian Company for Tourism

FAO - Food and Agriculture Organization of the United Nations

FEEMA - State Foundation for Environmental Engineering (Rio de Janeiro State)

FGV - Getulio Vargas Foundation

FINEP - Financier of Studies and Projects

FIOCRUZ - Oswaldo Cruz Foundation

FUNDACENTRO - National Centre for Occupational Safety, Hygiene and Medicine

GEIPOT - Brazilian Company for Transport Planning

IBDF - Brazilian Institute for Forestry Development

IBGE - Brazilian Institute for Geography and Statistics Foundation

IAEA - International Atomic Energy Agency

IBRD - International Bank for Reconstruction and Development

ICAO - International Civil Aviation Organization

IEA - Atomic Energy Institute of the University of Sao Paulo

ILO - International Labour Organization

IMCO - Intergovernmental Maritime Consultative Organization

IME - Military Institute for Engineering

INCRA - National Institute for Colonization and Agrarian Reform

INPA - National Institute for Research of the Amazon Region

INPI - National Institute for Industrial Property

INPM - National Institute for Weights and Measures

INPS - National Institute for Social Security

INUFPE - Nutrition Institute of the Federal University of Pernambuco

IPEA - Institute for Economic and Social Planning

IPF - Indicative Planning Figure

IPH - Institute for Hydraulic Research of the Federal University of Rio Grande do Sul

IPLAN - Institute for Planning

IPT - Institute of Technological Research

ITA - Aeronautical Technical Institute

ITAL - Institute for Food Technology

ITU - International Telecommunication Union

MEC - Ministry of Education and Culture

MINAGRI - Ministry of Agriculture

MINICOM - Ministry of Communications

MINTER - Ministry of Interior

M.I.T. - Massachussetts Institute of Technology

MRE - Ministry of Foreign Affairs

NUCLEBRAS - Brazilian Nuclear Companies
OAS - Organization of American States
OPI - Multi-year Investment Plan
PAHO - Pan American Health Organization
PASEP - Programme for the Development of the Public Servant
PBDCT - Basic Plan for the Development of Science
PETROBRAS - Brazilian Petroleum Company
PIB - Cross Domestic Product
PIN - Programme for National Integration
PIPMO - Intensive Programme for Manpower Preparation
PIS - Social Integration Programme
PLANITA - Integrated Plan for Food Technology
PNTE - National Programme for the Training of Executives
POLAMAZONIA - Agricultural and Agromineral Poles for the Development of the Amazon Region
PND - National Development Plan

PNPg - National Plan of Post-graduation
PRODEPAN - Special Programme for the Development of the Partanal
PROTAP - Training Programme in Administration of Scientific and Technological Research
PROTERRA - Programme for Redistribution of Land and Stimulation of Agroindustry in the North and Northest
REMI - Representation of the Ministry of the Interior in Rio de Janeiro
SEMA - Special Secretariat for the Environment
SEPLAN - Secretariat of Planning of the Presidency of the Republic
SENAC - National Business Training Service
SENAI - National Industrial Training Service
SENAR - National Service for Rural Professional Training
SNDCT - National System for the Development of Science and Technology
STI - Secretariat for Industrial Technology of the Ministry of Industry and Commerce
SUBIN - Secretariat for International Economic and Technical Cooperation
SUDAM - Superintendency for the Development of the Amazon
SUDECO - Superintendency for the Development of the Centre-West
SUDENE - Superintendency for the Development of the Northeast

SUDEPE - Superintendency for Fishery Development

SUDESUL - Superintendency for the Development of the Southern Region

SUPLAN - Secretariat for Planning and Budget of the Ministry of Agriculture

TELEBRAS - Brazilian Telecommunications Incorporated

UNDP - United Nations Development Programme

UNESCO - United Nations Organization for Education Science and Culture

UNIDO - United Nations Industrial Development Organization

USP - University of Sao Paulo

UFRGS - Federal University of Rio Grande do Sul

WHO - World Health Organization

WIPO - World Intellectual Property Organization

WMO - World Meteorological Organization